INDIAN STEEL AND PROTECTION

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PUBLISHED BY THE

UNIVERSITY OF CALCUTTA

1939

PRINTED IN INDIA

PRINTED AND PUBLISHED BY BHUPENDRALAL BANERJEE
AT THE CALCUTTA UNIVERSITY PRESS, SENATE HOUSE, CALCUTTA.

Reg. No. 1185B—June, 1939—E.

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THE AUTHOR'S PREFACE

The object of this book, entitled " Indian Steel and Protection," is to furnish not a body of eternal verities or settled doctrines, nor a mystic crystal that reveals the future, but a method of approach, an apparatus of thought, that will help the reader to arrive at conclusions relative to a particular set of conditions.

As the story of Indian Steel has been, until recently, the story of the Tata Iron and Steel Company in the main, attention has been confined to a discussion of protection in relation to the history of Tatas, with just a passing reference to the new-grown Steel Corporation of Bengal towards the end of Chapter IV.

Of the four chapters in this book, the first traces the early beginnings and the progress of the Steel Age, with special reference to India; the second elaborates and applies the theoretic arguments for Protection to Indian Steel; the third discusses the fate of the Indian Steel industry under the various regimes of protection that were introduced in succession during the early post-War crisis, the brief season of illusive prosperity that succeeded it, and during the currency, credit and trade crises that followed on the Wall Street crash of 1929; and the fourth furnishes a criticism of the new regime of Protection

that was brought into force towards the latter part of 1934.

In Appendix A are described the organisation and the administration of Jamshedpur, which is the seat of the Tata Iron and Steel Works, and in Appendix B the welfare activities of the Steel Company.

It will be seen from Appendix A that the Tata Iron and Steel Company has not only created and established on a stable basis the steel industry in India, but has also brought into being and maintains a large industrial town and has made itself responsible for such amenities as roads, drainage, sanitation, water supply, hospitals, schools, housing and markets, the provision of which normally devolves upon municipalities. The total capital expenditure that the Steel Company has incurred in respect of the town, including housing, has been Rs. 200·06 lacs, on which it bears a net annual loss of Rs. 24 lacs on an average.

It is also worthy of note, as has been mentioned in the Answers of the Tata Iron and Steel Co., Ltd., to the Questionnaire of the Labour Enquiry Committee, Bihar, that—

"In 1936-37 the Company manufactured and sold products of the value of about Rs. 9 crores and in 1937-38 of the value of over Rs. 10 crores. This large sum was for the greater part spent in the country instead of being sent abroad for the purchase of steel, and created trade and employment for thousands of people, which in its turn led to further circulation of money and expansion of trade and employment. Besides this, the Company made

the following contributions to Government and public revenues in 1936-37 and 1937-38 :—

	Excise duty on ingots produced.	Customs duty on meterials imported.	Railway freight.	Income-tax and Super-tax including deductions from employees' salaries.	Miscellaneous.	Total.
	Rs. lacs.	Rs. lacs.	Rs. lacs.	Rs. lacs.	Rs. lacs.	Rs. lacs.
1936-37	34·13	3·52	155·92	35·55	2·85	231·97
1937-38	35·35	5·28	165·71	36·12	4·81	247·27

Besides this, it sold to Government 76,347 tons of rails in 1936-37 and 72,487 tons in 1937-38 at the fixed price of Rs. 95 per ton as compared with the average world export price of Rs. 130 per ton, thereby saving to Government a sum of Rs. 52 lacs. These figures are brought out to show the relative importance in the economy of the country of the Company's activities and the consequences that might follow if its activities were to be impaired or to cease owing to labour troubles."

The conclusion reached in the last chapter of this book is, of necessity, an essay in speculation, since the age we live in is an age bristling with uncertainties, with no sign-posts pointing to the course of the future. Hardly had the world lifted itself out of the Slough of Despond about a few years ago, when the effects of the Italo-Abyssinian War began to manifest themselves. To add to the uncertainties that already existed, came the Spanish Civil War and the Sino-Japanese conflict producing repercussions of such a complicated nature as to

defy all analysis. The conquest by Germany first of Austria and then of Czechoslovakia, and the general fear of war that hangs over the world, have further complicated an already baffling situation. But reading the signs of the times it appears, as will be seen from the concluding chapter, that by 1941 the Steel Company will be in a position to manage without protection altogether, unless a slump of the worst type supervenes shaking the entire industrial edifice to its foundations.

It is, however, to be understood clearly that the views presented in this book are strictly personal to the author.

CHAPTER I

The Story of Iron and Steel

The age of Iron and Steel:

Origins are always obscure. We read of the Iron Age in India about 1000 B.C.; of iron weapons, tools, vessels and chariot fittings in China about 500 B.C. From 300 B.C. onwards, we read of steel-making and of the practice of the art of damascening on soft steel in India. But whether the discovery of iron and steel and of their varied uses in different countries was a process that diffused from one centre or was evolved independently in different centres, none can tell with certainty. Probably, it was a process partly of diffusion and partly of independent evolution.

As we approach the Middle Ages, the mists have almost lifted: Persia is importing steel from India; the Saracens are fighting with Damascus blades of Indian steel; China is building her pagodas of iron; India is boasting its famous wrought iron column that was erected about 415 A.D.

In the West, door-hinge ornaments, as in Notre Dame in Paris; grilles, as at Troyes and

Rouen in France and at Florence in Italy ; candelabra, font-cranes and gable crosses, as in Belgium ; screens, tomb railings, locks and door handles in general—all are wrought in iron.

Floating along the stream of time, we find the Middle Ages have come and gone and it is the light of Renaissance that now illumines the world. New uses are discovered for iron, the master metal. The gondola prows at Venice, and cressets at Lucca ; screens and gates, as for parks in Paris, as at Hampton Court Palace in London ; precincts, as of the colleges at Cambridge and Oxford ; lanterns and banner holders, balusters, pulpits and balconies—all are made or worked in iron.

In the fourteenth century, cast iron is discovered in Europe and utilised for the making of panels of stoves and railings and " Berlin " jewellery.

* *Note*. The origin of castings is a matter of controversy. According to Thomas T. Read of Columbia University (*vide* his article in the April issue of the Iron Age, 1936), the oldest casting of which we know the date is a sacrificial bowl, shaped like an incense burner, with human figures for legs. It stands in the yard of the Yu-Ch'uan temple in Tang-yang-hsien, Hupei, and is dated 615 A.D., according to plate 39 of volume IV of Tokiwa and Sakino's Buddhist Monuments of China.

There are older castings, too, but their date is lost in the mists of antiquity. But since Wang Mang, who ruled from 9 A.D. to 25 A.D., is said to have cast coins of iron, it is probable that castings were made in China even before the dawn of the Christian era.

Relying on literary evidence, as Read tells us in the same article, it occurs in the Tso Ch'uan that two officials of the State of Ts'in requisitioned 650 lbs. of iron to cast a vessel in 513 B.C. We also read in the Greek literature

Taking a bold leap forward, past the days of the Reformation and the Industrial Revolution, we reach the modern era, which may be termed the Iron and Steel Age *par excellence*. The farmer's plough, harrow and drill; the industrialist's tools and machinery; the millionaire's safes and cabinets; the housewife's pans and stoves; milady's pianoforte strings and hair-pins; milord's golf clubs; our railroads, bridges, ships and automobiles, telegraph and telephone and other electrical appliances—all are made of iron or steel.

Architecturally, the American sky-scraper, "a salute to Heaven from the earth," in fact, all modern buildings all the world over, have iron or steel for their frame-work—a great leap from the day when mere door hinges and handles were of iron.

The story of Indian Steel:

In India the first efforts to produce steel on modern lines was made by Mr. Josiah Marshall Heath of the Madras Civil Service in 1830. Relinquishing the service of the East India Company, he set furnaces in operation at Porto Novo in South Arcot. In 1833, the Porto Novo Steel and Iron Company took over the business and set up new furnaces at Beypur on the Malabar Coast. But all efforts to produce steel proved abortive.

In 1853, a new firm called the East India Iron Company, supported by concessions from the Gov-

that Theodorus, the Samian, in the 6th century B.C., "invented how to pour iron and fabricate statues from it."

In all probability, the first casting was made before 600 B.C.

ernment, made its debût with a capital of £400,000. A blast furnace was erected in the South Arcot District; another on the Cauvery River. Attempts were also made in Bengal and the United Provinces to foster the growth of iron and steel. But confusion or failure waited on all these enterprises.

In 1875, the Barrakpur Iron Works were started, destined for a different fate. Struggling through troubled waters in the beginning, obliged to close their doors in 1879, they were taken over by the Government in 1881 and transferred in running condition to the Bengal Iron and Steel Company in 1889. In 1919, what was known as the Bengal Iron Company came into being, undertook extensions to the plant and fought its way to success.

Thus, through the darkness of early failures burst the dawn of iron in the modern sense in India. But the dawn of steel was not yet; it awaited the arrival of one of India's greatest men, the late Mr. J. N. Tata, to whom, unfortunately, we can dedicate only a few lines here.

"All these men were honoured in their generations and were the glory of their times."

The late Mr. J. N. Tata, who founded the Empress Mills at Nagpur, the Iron and Steel Works at Jamshedpur, and the Hydro-electric Scheme at Mercara, seems more an epoch than a man in retrospect.

A soaring visionary, yet a sober realist, from his youth he dreamed dreams of an industrial India. In 1882, a perusal of a "Report on the financial

prospects of iron working in the Chanda District " by Ritter Von Schwarz, a German mining expert, inspired action. He applied to the Government for concession to work the rich Lohara iron deposits with the Warora coal. The idea was scorned.

In 1899, the appearance of General R. H. Mahon's report on the manufacture of iron and steel raised hopes afresh. This report told him of the rich coking qualities of the Jherria coal, and pointed to Calcutta or its neighbourhood, with its nearness to coal and its command of extensive markets as the most ideal seat for the iron and steel industry; it told him of the necessity for a most modern equipment and a management " combining expert knowledge with local experience "; it emphasised the need for economy in the assemblage of raw materials.

In the same year, Lord Curzon revised the old rules for mining and prospecting, which permitted an individual to explore a region, but allowed the Government to intervene and sell the fruits of his arduous toils to another man.

Brimming with a new zeal, Mr. Tata visited the iron districts of Great Britain and America, consulted experts, and on the advice of Mr. Julian Kennedy, Sahlin & Co., Ltd., engaged the services of Mr. Charles Page Perin to undertake the necessary geological work in India. As Mr. Perin was unable to sail immediately, Mr. Tata employed Mr. C. M. Weld and arranged for his immediate departure to Bombay.

Meanwhile, the prospecting licenses for the Lohara and Peeplegaon areas in the Chanda district had been obtained. The scheme began to move, the

battle began. But Mr. Tata was too old to fight the obstacles. He had pursued his ideal in the face of every species of discouragement, with no confusion or loss of direction, like a soldier at his post, battling heroically, suffering nobly, not caring for money or gain, which, he well knew, lay not in steel, but in pig iron and other industries. Now in the grey twilight of old age, he could only exhort his son to carry on and himself stand aside and watch, watch bravely, never complaining of old age or weakness. It is true that most of his schemes fructified after him, but the credit is his, for his was the conception, his the sowing. The year 1904 dawned, and on May 19, our hero put on immortality and Death was swallowed up in Victory.

The dark days of struggle continued, relieved only by faint streaks of hope that were invariably dispelled by thick mists of uncertainty, doubt and despair. Mr. Weld, Mr. J. N. Tata's son, Mr. Dorabji Tata, and his nephew, Mr. Shapurji Saklatvala, wandered through the jungles of the Central Provinces, bearing the heat of the day, ill-fed, ill-housed at night, looking for iron deposits, but finding none.

Meanwhile, rival prospectors appeared on the scene. Sir Ernest Cassel, the great capitalist, with whom much of the development of Egypt is associated, sent two experts, Mr. E. P. Martin and Professor Henry Louis, to explore the region of Jubbulpur. But they, too, were constrained to conclude that no workable iron deposit existed in that region.

There were other rivals, too, following Mr.

Weld and Mr. Dorabji, but the story of their endeavours is also a story of failure.

But the turn of the tide was not distant, though, in utter despair, all the prospecting licenses held by Mr. Tata, except the one for Lohara, had already been surrendered. On a visit to Nagpur to see Sir Benjamin Robertson, the Chief Secretary of the Central Provinces Administration, and acquaint him with their failure, Mr. Dorabji Tata wandered into a museum opposite the Secretariat to while away the time, Sir Benjamin not being in. There, his eye fell on a geological map of the Central Provinces, which invested the Drug District, near Raipur, with large iron occurrences. A specimen of good iron ore from this district, which lay in the museum, raised hopes afresh. Later, when he met Sir Benjamin, Mr. Dorabji learnt that Mr. P. N. Bose, a survey officer, had already referred to that district in one of his reports, as being rich in iron ore. The thread was picked up again. Investments commenced anew. Bound for the Dhálli and the Rajhara hills, Mr. Weld reached a village, where some primitive iron smelters informed him that they obtained their ore from a near-by hill. As he climbed this hill, he found himself almost treading on metal, for it was a hill of iron, a true "mineral wonder of the world."

A prospecting license for the Dhalli and the Rajhara hills obtained, diamond drills made borings in them. The preliminary analyses showed that the ore contained 65½ per cent. iron. Later, the surface samples yielded the following results: Fe, 66·35; P, ·058; S, ·108; SiO_2, 1·44; Mn, ·151 per cent.; whilst the averages for the cores worked out

as follows : Fe. 68·56; P, ·064; S, ·071; SiO_2, ·71 ; Mn, ·175. (*Vide* the description of the Dondi-Lohara iron ores in the Quinquennial Review of the Mineral Production of India during the years 1904 and 1908, by Sir Thomas Holland and Dr. Leigh Fermor.)

Coal and Water :

One success followed another. The coking quality of coal from the Jherria coal-field was tested and found satisfactory.

The next question that awaited attention was water. The Central Provinces being ruled out as a possible seat for the Indian iron and steel industry on account of their dryness, Padampur, near Sambalpur, situate on the Mahanadi River, was considered to be a suitable site in the beginning. But it was abandoned as soon as Messrs. Tata Sons & Co., received a letter from Mr. P. N. Bose, informing them of the existence of rich iron occurrences in the Mayurbhanj territory. Messrs. Perin, Weld, Saklatvala and Dorabji Tata, then dived towards the ore-fields and lighted on extensive acres of " ore-float " in the Gorumahisani Hill.

The quality of the Gorumahisani ore will be apparent from the following analysis of samples given in the *Quinquennial Review* :

	Iron	Phosphorus	Sulphur	Silica
	Per cent.	Per cent.	Per cent	Per cent.
Average of eleven samples both solid and float ore ...	61·85	0·135	0·036	4·08
Average of twenty samples of float ore	61·46	0·048	0·036	3·34
Average of ten samples of solid ore	64·33	0·075	0·021	1·64

Not far from the Gorumahisani hill-mass, stood the Okampad ore-deposit of the following average analysis :

Fe, 67·65; SiO_2, 1·58; P, ·043; S, ·012 per cent.

And in the Sulaipat-Badampahar range, the Badampahar peak raised its head, rich with masses of ore-float.

It was clear that Mayurbhanj offered better advantages than Dhalli and Rajhara. It was nearer the sea and also nearer the coalfields. Government promised to build a railway and grant freight concessions, and also undertook to purchase from the proposed works 20,000 tons of steel rails annually for ten years.

But everything was not smooth for the prospectors. The problem of capital stared them in the face, defying solution. English capital was not forthcoming, as India with its new-born patriotism would not transfer to England the degree of control which the latter claimed as a condition of its assistance. At last, after protracted appeals to national sentiment, Indian capital poured in, the Maharaja Scindia of Gwalior alone furnishing the equivalent of £400,000, which represented all the working capital the industry required.

The capital obtained, the selection of a suitable site for the iron and steel industry was the next consideration. The Tata Iron & Steel Company, which had announced its existence in 1907, with Messrs. Julian Kennedy, Sahlin & Co., as its construction engineers, ultimately pitched on Sakchi for this purpose on account of its proximity to ore, coal and limestone supplies; its command of water

and rail-road facilities, its comparative nearness to the port of Calcutta; and on account of Mica Schist that underlay the site, furnishing an ideal foundation for a steel plant.

The actual construction of the works began in 1908; the Coke Ovens were fired for the first time in 1911 and the first pig iron produced towards the end of the same year. Early in 1912, the steel-producing units came into existence, the first ingot rolling off the Blooming Mill on the 16th February.

To describe the various stages in steel production at Jamshedpur, coal is carried mechanically into the crushers and after pulverisation shot up an elevator which empties it into larries bound for the Coke Ovens.

In the Coke Ovens, coal is heated in air-tight chambers and converted into coke. The gas dispelled from the coal during the process of distillation is utilised partly to heat and prepare the ovens for coking, and partly for heating steel, drying ladles and such-like purposes.

Two Sulphuric Acid Plants turn out the acid which converts the ammoniacal liquor obtained from the gas into sulphate of ammonia.

Another useful bye-product of this process, recovered and used in the Works or sold outside, is coal tar.

Almost all the coke turned out by the Coke Ovens, together with requisite charges of iron ore and limestone are then hoisted in skip cars to the

top of what is known as the Blast Furnace, which is sealed by two movable ' bells.' The raw materials dumped from the skip cars occupy the space between the open top bell and the closed bottom bell. The top bell then closes and the bottom bell opens, permitting the charge to descend in the furnace and meet ascending currents of heated gas, which is really cold air, superheated in stoves, blown in through openings called tuyeres near the bottom of the furnace, and transformed into gas consequent on its contact with coke. During their descent, the raw materials are reduced and melted; and limestone, in the capacity of flux, absorbs, to a great degree, the various impurities from the ore, forming a slag, which, being lighter than the molten metal, floats on top and is tapped from the furnace through a hole known as the slag hole, the pig iron being tapped later.

A major portion of the pig iron yielded by the Blast Furnaces is used for steel-making, a small residue being cast into sand beds or into moulds at the pig casting machine and sold on the market for foundry use.

The two processes used for the transformation of pig iron into steel at Jamshedpur are the basic open hearth and the Duplex process, the function of both of which is the purification of pig iron.

The two processes, however, differ in certain respects. Thus, whereas the open hearth process uses both pig iron and scrap, the Duplex process uses pig iron exclusively.

Again, whereas in the open hearth process, the purification of pig iron is effected entirely in the

open hearth; in the Duplex process, the molten metal is first 'blown' in an acid Bessemer converter, impurities such as silicon, manganese and carbon being removed, before it is subjected to the purifying process of the open hearth in a tilting furnace, where phosphorus is eliminated as far as possible and steel of different specifications obtained through the addition of certain alloys in certain proportions.

The molten steel yielded by the two processes is poured into ladles, and thence 'teemed' into moulds where it is allowed to solidify.

The solidified steel, known as ingots, is taken out of these moulds, hauled in rail-road trollies to heating furnaces called soaking pits, charged into them and raised to a temperature requisite for rolling. The Blooming Mill reduces these ingots to what are known as blooms and slabs. Slabs are rolled into plates in the Plate Mill, and of the blooms turned out, a certain tonnage is transformed into rails and structurals in the Rail and Structural Mill, the balance being rolled into sheet bars, billets, sleeper bars and tin bars in the Sheet Bar and Billet Mill.

Sheet bars are transformed into sheets in the Sheet Mill; billets into merchant bars and light structurals in the Merchant Mill; sleeper bars are pressed into sleepers in the Sleeper Press; and tin bars sent to the Tinplate Company, at a distance of two to three miles from the Jamshedpur Steel Works, for transformation into tinplates.

CHAPTER II

Protection to Indian Iron and Steel

The Indian Fiscal Commission, presided over by the Hon'ble Sir Ibrahim Rahimtoola, Kt., C.I.E., which advocated discriminating protection for India, laid down the following conditions which an industry must satisfy before it could be deemed suitable for protection :

> "(1) The Industry must be one possessing natural advantages, such as an abundant supply of raw material, cheap power, a sufficient supply of labour or a large home market. Such advantages will be of different relative importance in different industries, but they should all be weighed and their relative importance assessed. The successful industries of the world possess certain comparative advantages to which they owe their success. No industry which does not possess some comparative advantages will be able to compete with them on equal terms, and therefore the natural advantages possessed by an Indian industry should be analysed carefully, in order to ensure as far as possible that no industry

is protected which will become a permanent burden on the community.

"(2) The industry must be one which without the help of protection either is not likely to develop at all or is not likely to develop so rapidly as is desirable in the interests of the country.....

"(3) The industry must be one which will eventually be able to face world competition without protection. In forming an estimate of the probabilities of this condition being fulfilled the natural advantages referred to in condition (1) will, of course, be considered carefully. The importance of this condition is obvious. The protection we contemplate is a temporary protection to be given to industries which will eventually be able to stand alone."

The Fiscal Commission's First Condition.

(*a*) India's Mineral Resources for a Domestic Steel Industry.

The researches of the Geological Survey of India and the Prospecting staffs of the larger Mining Companies have established that India possesses great natural advantages for the production of steel and iron. We may follow Dr. Fox, who prepared a report on the mineral resources of India for a domestic steel industry, and discuss the relevant raw materials under the following heads :—

1. Iron Ore.
2. Coking Coal.

3. Fluxes.
4. Modifying Metals.
5. Refractory Materials.

Iron Ore:

India possesses rich deposits of iron ore in the shape of magnetite, laterite, clay ironstone and hematite. Of these types, the hematite ores of Singhbhum and Orissa in the "Iron Belt" are the most valuable ores at present. In the words of Dr. Fox,

> " Both in quality and quantity these ores are thought to exceed any other ores of the same kind, including the great American occurrences of Minnesota, Wisconsin and Michigan.
>
> " The quality of the ' Iron Belt ' ores can be gauged from the following analysis :
>
> 64·0 per cent. Fe (iron)
> 0·05 per cent. Manganese dioxide
> 2·1 per cent. Silica
> 0·05 per cent. Phosphorus
> 0·02 per cent. Sulphur
> 0·15 per cent. Lime
> 0·18 per cent. Magnesia, and
> 1·25 per cent. Alumina.
>
> " .....The iron content often ranges up to 68 per cent. Apart from their high metal percentage, these ores are notable for their low sulphur total which is never more than 0·6 per cent....."

The percentage of iron in the ores as despatched from the four mines worked by the Tata Iron & Steel Company is as follows :—

Sulaipat	67 to 69
Badampahar	56 to 57
Gorumahisani	62
Noamundi	62 to 69.

" Recent estimates of the hematites of the ' Iron Belt ' as given by Mr. H. C. Jones of the Geological Survey of India are for ores containing not less than 60 per cent. Fe (iron) as follows :—

	Million tons.
Singhbhum District	1,074
Keonjhar State	806
Bonai State	656
Bonai or Keonjhar	230
Mayurbhanj State	16
Total ' Iron Belt '	2,782 "

Mr. E. Parsons' calculations proved that the quantity of 60 per cent. ore in the same area could not be less than 3,000 million tons. Although, research is still busy in this direction, we may safely admit the validity of Dr. Fox's assertion that "these ores alone will be more than sufficient for the requirements of the Indian ironmasters.....for 1,000 years at the projected output of 1,500,000 tons of pig iron annually."

Coking Coal :

India does not possess such rich deposits of coking coals as of iron. The best Indian coals are " characteristically high in phosphorus and moderately high in ash " and their calorific value is about 10 per cent. lower than that of the medium-grade coals of Great Britain, America and Germany. But, as they are relatively cheap, the cost of coke per ton of pig iron is not so high, although more coke is consumed in pig iron production in India than in most other countries.

The question of quantity, however, is serious. Dr. Pascoe, ex-Director of the Geological Survey wrote,

> " I think it is safe to conclude that, assuming 3 tons of coking coal to be necessary to produce $2\frac{1}{4}$ tons of coke, there is enough coking coal in India to supply the iron and steel industry with 4 million tons of Metallurgical coke per annum for the next 150 years at least."

But this optimism of Dr. Pascoe must be contrasted with the pessimism of the following excerpt from the Industrial Bulletin No. 15, dated the 20th August, 1934, published by the Employers' Federation of India :

> " Good coking coal reserves are said to be about 1500 million tons, which, with an extraction of 50 per cent. and raisings of 12·1/2 million tons per year, should last 60 years."

The Coal Mining Committee, whose report was published in 1937, estimated that the reserves of

coking coals in the Bengal and Bihar Fields amount to 1426 million tons. Assuming an average ultimate extraction of 50 per cent. and taking the present annual production at 11·5 million tons, the life of the coking coal reserves at the end of 1936 worked out as under :—

$$1426 \times \frac{50}{100} \times \frac{2}{23} = 62 \text{ years.}$$

This figure is very perturbing to the Indian steel industry, as it means that the industry is likely to be faced with a shortage of coal reserves in another 60 years or so, unless a vigorous policy of coal conservation is pursued and " stowing " introduced at an early date so as to prevent different kinds of waste, or efficient substitutes for good quality coking coal are discovered and improvements effected which will enable the steel industry to utilize inferior grade coals as well.

Nearness of iron and coal :

Apart from the abundance of our ores, the nearness of the coal fields and the iron ore deposits, is a great boon to the Tata Company, the distance between them being only 200 miles, roughly. This is important as the freight on raw materials bulks as an important item in the cost sheet. As it is, the Company brings its iron ore from a distance ranging from 40 to 85 miles, and its coal from a distance of about 110 miles. Although in a few rare instances in both America and Europe, the supplies of raw materials are obtained from much shorter distances, in Europe the coal or the ore has generally to be brought from a distance of 200 miles or more, while in America, the distances are even longer. The Western district of Pennsylvania, for example, which is

the greatest centre of steel manufacture in the world brings its supplies of iron ore " from the western shores of lake Superior, more than a thousand miles distant, the journey involving a double transference from rail to water carriage and *vice versa*, and its coal by rail from a distance of about 60 miles. It will be seen, therefore, that in this respect India possesses a natural advantage over many countries."

Fluxes :

Although most of the large deposits of rich limestone in India lie at prohibitive distances from the Tata Steel Works, the available supplies of limestone and dolomite are sufficient for their purpose and though large quantities have to be used owing to their inferior quality, the cost of fluxes in this country is no higher than abroad, as their prices are lower.

Modifying Metals and Refractory Materials :

(*a*) *Manganese* : The Indian production of manganese ore was 978,193 tons in 1937, which is more than sufficient for the requirements of India.

(*b*) *Refractories* : Rich deposits of fireclays and silica found in many parts of the country exist in sufficient quantities to meet the demands of the iron and steel industry.

Chief Power :

Since the total Indian reserves of coal of all grades were estimated by Dr. Fox at the end of 1932 at approximately 60,000 million tons, the steel industry at Jamshedpur may be said to have access to sufficient supplies of coal as a cheap source of power.

Thus the domestic steel industry can rely on a cheap and abundant source of power practically all the year round.

Indian Labour in the Steel Industry :

The Royal Commission on Labour in India, wrote in 1931 as follows :—

" Throughout the greater part of its history, organised industry in India has experienced a shortage of labour..." But " perennial factories... have now reached a position in which most of them have sufficient labour at all seasons and there is a surplus of factory labour at several centres. The change has been gradual, and it has proceeded at a different pace in different centres.....speaking generally, it would be true to say that the turning point came during the last five years. Up to that stage, labour tended to have the upper hand in that there was competition for its services ; since then the tendency has been for the workers to compete for jobs....."

Mr. Harold Butler writes in his book, " Problems of Industry in the East," " whereas only a few years ago it was said to be difficult to obtain labour in industry, that complaint is not heard today. On the contrary, during the recent boom in the cotton trade, Bombay, Cawnpore and Ahmedabad were able to recruit the tens of thousands of additional workers needed to run a night shift with no difficulty whatever.....The number of men wanting to go to sea is so great that the unions have been urging a system of engagement by rotation on the shipowners of Bombay and Calcutta. In fact, there is probably no industry in the country that could not recruit all the unskilled labour it required within a few days or weeks."

In order to raise the quality and efficiency of Indian labour, 18 Central and 13 Provincial Acts

were adopted during the years 1932 to 1937, the inspiration for the improvement of labour conditions having come chiefly from the Conventions of the International Labour Organisation and the recommendations of the Whitley Commission.

It is true that only 14 Conventions of the I. L. O. have so far been ratified by India, and there is still a number of Conventions which might be adopted with advantage by the provinces, but with the introduction of Provincial Autonomy, most of the initiative in this field is being left to the provinces and unless labour legislation is introduced on an all-India basis, so as to secure uniformity all over India, it will be difficult to persuade individual provinces to initiate labour legislation on any comprehensive scale. It is therefore suggested that some suitable machinery like the national industrial council, advocated by the Whitley Commission, be set up to discuss labour problems from an all-India point of view, for in the words of the Whitley Report, " to divide India into a series of units which could only progress independently would be a definitely retrograde step" (p. 458).

The establishment of a national industrial council, representative of both industrialists and labour is one of the immediate necessities, for sit-down or lightning strikes seem to have become a frequent occurrence. It has been estimated that in spite of the fact that factory inspection has been introduced, measures to ensure health and safety are being taken, working hours have been reduced, the system of payment of compensation for accidents and vocational diseases is being extended and the employment of women

and children regulated, the number of labour disputes over the last ten years has been in the region of 150 a year. Recently, the strike fever has been so rampant in practically all parts of India, that it is feared the confidence of investors may get rudely shaken and it may become difficult to attract fresh capital on the requisite scale into the channels of industry. It should be remembered that India cannot adopt blindly the labour regulations that prevail in more advanced countries, where efficiency is greater and the workers have a higher sense of responsibility. As Mr. Harold Butler remarked: ".....the conditions of employment in large-scale factories, though capable of further improvement, are in reasonable correspondence with India's present stage of industrial development." The pace of reform in the different provinces should be such as would ameliorate the social and economic conditions of labour, without at the same time causing any misgivings in the minds of industrialists or bringing the wheels of industry to a standstill.

The Indian Market for Steel:

That the Indian steel industry has an extensive home market will be obvious from the following statement of the last Tariff Board:

> "We take the year 1929-30 as a typical year, to which we believe the demand in the near future is likely to conform. The consumption in that year of protected steel was 1,078,000 tons. This is a little more than the average of the past ten years and we prefer to take it as

more correctly representing what we may call a normal demand."

In the Representation submitted to the Indian Tariff Board by the Tata Company in 1933, the average annual production of steel for sale during 1934 and 1941 was estimated at 530,000 tons, while, according to the Tariff Board, the Company's maximum output was taken at 650,000 tons a year. Actually the figure has been higher still, 667,000 tons of saleable steel being produced in 1936-37. and 660,000 tons in 1937-38.

To sum up this part of the argument, the domestic steel industry possesses great natural advantages in the shape of an abundant supply of raw material, cheap power, a sufficient supply of labour, and a large home market; and more than fulfils in every sense the first condition laid down by the Fiscal Commission, which an industry must satisfy before it can be deemed suitable for protection.

The Fiscal Commission's Second Condition.

Necessity of Protection to Iron and Steel.

Mr. Fairhurst, giving evidence before the Tariff Board in 1924, said that under the existing circumstances, the Indian Iron and Steel Company would not consider the question of embarking on the manufacture of steel unless protection were granted. Mr. Tarlton, who gave evidence on behalf of the United Steel Corporation of Asia, stated that without protection it would be impossible for a new industry to attract the necessary capital. It was the deliberate opinion of the Board itself that

" without the help of protection, the steel industry is not likely to develop at all."

Nor was the proposal for temporary protection to the Indian Steel Industry repugnant to the doctrine of free trade. Even John Stuart Mill admitted the validity of what has been called the " infant-industry argument." The classical expression of this doctrine is found in the writings of List. Professor Pigou of Cambridge sums up the argument thus :—

> " The main element of productive power, whose development involves a long process, is a population trained in the general atmosphere of industrial pursuits. If a country is entirely agricultural and has no important class of artisans or factory workers, the skill required for starting any particular kind of mill will be very difficult to get. As List wrote in his book called, ' National System of Economy,' ' Masters, foremen and workmen must first be either trained up at home or procured from abroad, until the profitableness of the business has been sufficiently tested to give capitalists confidence in its success.' For a long time, therefore, it is improbable that any works which may be started will be able to compete on equal terms with established foreign rivals—and that in spite of the fact that the industry in question may be one for which the

> country has great natural advantages. On the other hand, in a country which is already largely industrial, the initial difficulty involved in starting a new industry is likely to be much slighter. For much less time is required to obtain, from among a people already accustomed to many varieties of factory work, hands capable of carrying on a new variety of it. Further, in an industrial community, those other important elements of productive power, organised systems of transport and of credit, which, in an agricultural country, may need themselves to be built up before manufactures can be profitably established, are presumably already in existence."

Pigou winds up this passage with the following important conclusion :—

> " . . . . the case for Protection with a view to building up productive power is strong in any agricultural country which seems to possess natural advantages for manufacturing. In such a country the immediate loss arising from the check to the exchange of native produce for foreign manufactures may well be outweighed by the gain from the greater rapidity with which the home manufacturing power is developed. . . . . "

It must be remembered, however, that Mill's plea for protection applied to a young and rising

nation, rather than to one with young industries; while List's argument rested on the belief that protective duties were the best device for furthering and easing an inevitable transition from the agricultural and extractive stage to the manufacturing stage. But does the same reasoning hold good when this transitional stage has been passed and the question no longer is whether manufacturing industries should be established at all, but whether some new industries should be added to others already in existence?

Taussig's unhesitating answer embodied in his "Some Aspects of the Tariff Question," published in 1918, is as follows:—

> "Notwithstanding early prepossessions to the contrary, I am disposed to admit that there is scope for protection to young industries even in such a later stage of development. Any period of transition and of great industrial change may present the opportunity. No doubt the obstacles to new ventures were greater during the first half of the nineteenth century than they have come to be in the modern period. The general diffusion of technical knowledge and technical training, the lessening of secrecy in trade processes which is the inevitable result of large-scale operations, the cessation of regulations like the early British prohibition of the export of machinery, the greater plenty of expert mechanics and machinists—all these

> factors tend to facilitate the establishment of industries whose difficulties are no more than temporary and transitional. None the less the early stage of any new industry remains difficult. In every direction economists have come to recognise the immense force of custom and routine, even in the countries where mobility and enterprise are at the highest. Departure from the habitual paths of industry brings unexpected problems and difficulties, false starts and initial losses, often a fruitless imitation of familiar processes before new and better ones are devised. All this is made more trying when a young competitor is striving to enter the market against a producer who is established and well equipped. The experiences of the United States during the last fifty years . . . . indicate that there remains in modern times at least the possibility of acquiring a self-sustaining industry by aid during the early stages."

These arguments of List, Mill, Taussig and Pigou in favour of initial protection are of particular application to the present condition of India, while the factors enumerated by Taussig above as tending to " facilitate the establishment of industries whose difficulties are no more than temporary, and transitional " do not exist. India is still " a young and rising nation," to use Mill's phrase. Although agricultural in the main, it

possesses great " natural advantages for manufacturing." In fact, it is already in that inevitable stage of transition from the agricultural and extractive stage to the manufacturing stage in which List found America and Germany : it needs the same nurturing protection that he advocated for Germany. The " shyness of capital for modern enterprises generally " still exists. Skilled labour has still to be imported. The country is still weak in " other important elements of productive power, organised system of transport and of credit," as Pigou has it. Railways have not as yet afforded that cheap and intensive development of transportation which characterised the development of the American steel industry. Instead, the B.-N. Railway and the E. I. Railway have both increased the freight rates. (See Chapter IV.) The country still lacks initiative and confidence, and still has to fight the forces of custom, tradition, and inertia ; its banks are still over-conservative in advancing industrial loans.

The classical doctrine of free trade rested on the assumption that no artificial restrictions hampered the free flow of international trade. But since the last World War, this assumption has been completely invalidated as will be seen later.

The War left the European civilisation in a state of decay. Some of the industries were completely shattered and needed re-building ; others, like iron and steel, that had been expanded to meet the exigencies of the war, found that their producing capacity was greatly in excess of consuming power. In order to work to its maximum their vastly expanded production equipment, both

American and European producers sought to dispose of abroad their surplus production at a price much lower than the domestic price. But it was not easy to reap the full advantages of capacity production. For it was not long before a series of currency, credit and trade crises swept the world, driving the ship of trade into the doldrums. Numerous firms that had been swimming comfortably in warm waters could not face the blizzard and went under; others, more energetic, merely managed to keep floundering in the shallows. In their desperate attempt to keep their heads above water, America and the various Continental countries adopted a policy of protection at home and dumping abroad, even England, the classic land of *laissez-faire* in trade, dumping the old tin can of Free Trade in the back yard and resorting to a protective tariff.

As regards dumping, it is really its temporary character that makes it obnoxious. For during its continuance it dislocates the industries of the dumped country, causing massive displacement of labour and capital; and later, when it ceases, the eventual return of the productive resources into their normal channels is a process bristling with all the difficulties of transition.

"No doubt," as Professor Taussig said in his Presidential address to the American Economic Association in 1904, "these were not the only considerations that in fact led Great Britain, the one great dumping ground, to serve notice that she would impose import duties equal to the bounties, unless these were stopped. Perhaps this decisive step would have been taken even if it had

appeared that the bounties were to continue as a permanent factor in the sugar trade. But it is in their probably temporary character that the sober economist finds justification for the policy that led to their abolition. At all events there is tenable ground for arguing that Great Britain, in causing them to be stamped out, acted not only in the interests of the much-abused consumers of sugar on the Continent, but in the permanent interests of her own industrial organisation."

The case of the Indian iron and steel industry stood on a similar footing when the last Tariff Board held its enquiry. The foreign dumping with which it was faced then, was predatory, was practised from behind a monopoly, and was state-aided. It had assumed the shape not only of "freight" dumping but also of "exchange" dumping, reinforced by what M. Yves Guyot called "aggressive Protection," *i.e.*, a bonus on exports.

The Fiscal Commission's Third Condition.

Eventual Ability of the Steel Industry to Face World Competition Without Protection.

Mill realised the importance of this condition when he wrote that ". . . protection should be confined to cases in which there is good ground of assurance that the industry which it fosters will after a time be able to dispense with it."

Indeed, in the words of List, "the nation must sacrifice and give up a measure of material prosperity in order to gain culture, skill and powers of

united production; it must sacrifice some present advantages in order to insure to itself future ones." But the doctors of finance must make sure that the burden of protection does not hang like a permanent mill-stone round the neck of the nation. Only those industries should receive state-aid which have capacities of growth, and as soon as they have had " the time necessary for a fair trial of what they are capable of accomplishing," protection to them should be discontinued.

As regards the Indian steel industry, as early as 1924, the Indian Tariff Board wrote :—

> " The third question we have to answer is whether the steel industry is one which will eventually be able to face world competition without protection. We have no hesitation in answering it in the affirmative . . . . India's natural advantages are so great that we believe it will not be long before the initial difficulties are overcome, and steel is produced at a cost low enough to enable it to face outside competition in India without protection."

Time has justified the Board's optimism. The extensions undertaken by the Tata Iron and Steel Company from year to year coupled with a resolution to maximise efficiency have resulted in increased production and decreased costs. The day is not distant now, as Chapter IV will show, when the Indian steel industry will have thrown off protection and taken its place in the open competition of nations.

Additional Factors strengthening a case for Protection :

The Indian Fiscal Commission also laid down the following subsidiary conditions which were regarded as elements strengthening a case for protection :—

(1) ". . . An industry in which the advantages of large scale production can be achieved, *i.e.*, in which increasing output would mean increasing economy of production, is, other things being equal, a particularly favourable subject for protection."

(2) " Another class of industry which should be regarded with a favourable eye is that in which there is a probability that in course of time the whole needs of the country could be supplied by the home production."

It must have struck the reader already that the Indian Iron and Steel Industry satisfies both these conditions. It is essentially an increasing return or a decreasing cost industry, *i.e.*, an industry in which costs fall as production expands. It is sure to capture the whole of the Indian market in course of time, especially as nearly 80 per cent. of the domestic demand is already being met by Tatas.

The Fiscal Commission also affirmed the principle that " any industry which is essential for national defence " or is of special military value " and for which the conditions in India are not unfavourable should, if necessary, be adequately pro-

tected, irrespective of the general conditions which we have laid down for the protection of industries." A few lines further they observed, "In the first place there is the steel and iron industry. There can be no question of its importance for purposes of national defence, and there appear to be no natural obstacles to its development in India." The last World War brought out over and over again the sovereign importance of this military industry. If Tatas did not exist, we might have run short of steel in Mesopotamia, Palestine and East Africa. Lord Chelmsford, during his visit to Jamshedpur in 1919, said :

> "I wanted to come here to express my appreciation of the great work which has been done by the Tata Company, during the past four years of this war. I can hardly imagine what we should have done during these four years if the Tata Company had not been able to give us steel rails which have been provided for us not only for Mesopotamia, but for Egypt, Palestine and East Africa."

The Fiscal Commission also observed as follows :—

> "The development of certain basic industries may be in the interests of the country generally . . . because, like the iron and steel industry, they will stimulate the establishment of other industries dependent on them."

Tatas have certainly stimulated the growth of a number of industries around them. The Tin-

plate Company grew up as it could depend on Tatas to provide it with " semis " for conversion into plates. The Indian Steel Wire Products Company owes its location near Jamshedpur mainly to the Steel Company, which has been feeding it with a continuous supply of raw materials at reasonably low rates. The Lightfoot Refrigeration Company set up a branch of its oxygen gas factory chiefly because it could count on Tatas to absorb supplies of that gas. The Tatanagar Foundry, the East Indian Railway Works and the Wagon Industry also receive assistance from Tatas in a variety of ways.

The importance of the iron and steel industry as a ' basic ' and a ' key ' industry has been recognised ever since the dawn of the industrial era. In 1916-18, when India was trembling on the brink of industrialisation, the Industrial Commission wrote, " The basis of modern organised industries in those countries where they made their first appearance, was the manufacture of cast and wrought iron " (p. 49). Even to-day, that metal is the broad base of the industrial pyramid. From it are fashioned all kinds of industrial tools and machinery, all manners of agricultural implements. It enters into railways, ships and aeroplanes and is of capital value for defence purposes. It furnishes the framework of many modern buildings and is the raw material for numerous articles of domestic use. In fact, this metal has probed to the core of so many departments of modern civilised life, that the present age has come to be labelled the Age of Iron and Steel. (See Chapter I.)

Obviously then, the development of the iron and steel industry is of vital importance to the pros-

perity of this country. It is an industry whose "social net product" is greater than its "private net product," *i.e.*, whose contribution to the national dividend is greater than its contribution to the private earnings of the Company. It has not only stimulated other industries into being, but also assists the mining industry by buying coal and other raw materials used in the manufacture of pig iron and steel, and makes a material addition to the volume of traffic handled by the Railways. The Tata Works, their mines and quarries and their Calcutta, Bombay and other offices, give employment to nearly 43,000 people. The total annual wages including bonus paid by the Steel Company to its direct employees amounted to Rs. 220 lakhs in 1937-38. This purchasing power at the command of workers necessarily stimulates the demand for the products of several other industries and thus has beneficial repercussions of a cumulative nature which lie entirely beyond the range of qoantitative analysis.

The Tata Company thus provides a fertile avenue of work, which should be regarded as a blessing in this age when unemployment is rife all over the world.

The Burden on the Consumer :

The common argument that protection always imposes a heavy burden on the narrow back of the consumer distorts the truth. For the issue is not quite so simple as that. The immediate effect of the imposition of a protective duty on imported material is undoubtedly to raise the price of the latter and inflict an initial burden on the consumer, but the ultimate effect is determined only by the

interplay of the elasticities of the foreign supply of, and the internal demand for, foreign steel " in the neighbourhood of marginal transactions." If the foreign producer can adapt his productive processes to a dwindling demand without incurring heavy losses, or is able to push his goods into new markets, then, *caeteris paribus*, he will be able to force up the price to some extent and shift at least a part of the burden on to the consumer in the protected country.

Similarly, if the domestic consumer has access to other sources of supply or can find substitutes for the taxed article or afford to do with smaller supplies of it, then, other things being equal, he will be able to resist the tendency for the price to rise.

In practice, however, other things seldom remain equal. Artificial factors such as kartells and combines, and elements like exchange control, export bounties and dumping in diverse forms obstruct the free flow of international trade, introducing incalculable complications and relegating all forecasts relating to the effect of a protective duty on the price of the dutiable article to the realm of intelligent speculation. Thus in his review of the effect of protection on steel rails in America, Professor Taussig had to admit that it was highly speculative to estimate how far the Tariff system inflicted a burden on the consumer by pushing up the price of rails, and to what degree it merely retrenched profits or augmented the losses of railway promoters and investors.

Under the circumstances, the only procedure left open is to resort to the method of trial and

error, and revise our conclusions as demanded by the actual course of events.

The man in the street, however, is prone to exaggerate the burden of a tariff system on the consumer. Thus during the discussions on the last steel Bill in the Indian Assembly, it was argued by some that if the existing duty on imported steel were entirely removed, the Indian consumer would be able to get items like Continental untested bars at the duty-free landed price of Continental steel

Such an argument is preposterous, for it cannot be expected that the Continental manufacturer would sell his steel at the lowest possible price when British steel could fetch much higher prices than warranted by its superiority of quality over Continental steel.

In any case, the burden on the consumer is only temporary. Besides, as Professor Pigou pointed out, " The crutches to teach the new manufactures to walk, as Colbert called protective duties, may teach them this so much earlier than they would have learnt it, if left to themselves, that the cost of the crutches is more than repaid."

Thus, even if a tax on foreign steel imported into this country is said to be against the canon of equity in the short run, since it is adjusted not to the circumstances of the consumer, but to the needs of the producer *qua* producer, it is sure to bring in enough compensation to the community in the long run.

Taxation and Revenue:

Nor is that all. The value to the Tata Iron and Steel Company of the protection granted on rolled steel has been appreciably lower than the additional revenue ac-

cruing to the Government from the same source, as will be apparent from a comparison of the following two statements :—

Value to the Tata Company of Protection granted on Rolled Steel.

Years.	Rs. Lakhs.	Remarks.
1924-25	83·9	Including bounty of 65·2 lakhs.
1925-26	107·1	,, ,, 70·9 ,,
1926-27	119·5	,, ,, 72·6 ,,
1927-28	40·3	
1928-29	20·0	
1929-30	48·1	
1930-31	58·0	
1931-32	84·2	
1932-33	94·0	
1933-34	100·6	
1934-35	92·8	
1935-36	77·7	
1936-37	61·3	
1937-38	21·6	
Total ...	1009·1	208·7

LESS:

Excise duty paid—	Rs. Lakhs.	
1934-35	14·7	
1935-36	35·2	
1936-37	34·1	
1937-38	35·3	119·3
	Net ...	889·8

NOTE :—These figures are obtained by multiplying production by the difference between the protective duties and the duties as they would have been on a revenue (*i.e.*, non-protective) basis.

Additional Revenue accrued to Government from Protective Duties on Rolled Steel excluding Government Stores.

Years.	Rs. Lakhs.
1924-25	120·3
1925-26	154·5
1926-27	153·9
1927-28	136·4
1928-29	117·5
1929-30	93·7
1930-31	75·3
1931-32	67·2
1932-33	63·2
1933-34	42·6
1934-35	43·2
1935-36	30·4
1936-37	21·2
1937-38	5·0
Total ...	1124·4
Plus : Excise duty from 1934-35 to 1937-38	119·3
	1243·7
Less: Bounty paid to the Company	208·7
Net ...	1035·0

NOTE:—The bounties paid to the Steel Company in the first three years are deducted. The above figures are obtained by multiplying the imports of protected materials by the difference between the protective duties and the duties as they would have been on a revenue (*i.e.*, non-protective) basis.

It will thus be seen that the revenue obtained by the Government from import duties has been in excess of the benefit derived by the Steel Company and that if this source of revenue was not available, it would have been necessary for the Government to tap some other source in order to balance its budget.

CHAPTER III

The Old Regimes of Protection

The dark days of the War were followed by an era only a trifle less dark; for the problems that faced the post-War world were not merely problems of party colours, placards and songs, but problems of unemployment, poverty and destitution, problems of life and death.

Apart from normal factors such as seasonal variations, harvest changes, wage-rigidity and the alternating swings of optimism and pessimism in business, the causes that brought about the post-war crisis were, the failure of vastly-expanded war industries, such as engineering, iron and steel, and ship-building, to adjust themselves to peace-time conditions; the interruption caused by the war, in the technical improvements that would have gone on in peace-time industries in the normal course of events; the currency disorders in various European countries; the erection of tariff barriers which hampered the free flow of trade; the break-up of Europe into a number of small states combined with the rise of a spirit of economic nationalism and self-sufficiency which led to over-production or superfluous production in general; a fall in agricultural prices which impoverished the agricultural countries and affected their demand for foreign

manufactured goods; the substitution of oil and hydro-electric power for coal which depressed the coal industry throughout the world; and the disorganisation of trade in cotton and other goods, with China, India and Japan, attributable to political disturbances and to the spread of industrialisation to the East.

Although a vast space divides India and the Western world, yet India could not go her own way, unaffected by the course of history in the West. Her steel industry, which had accepted unusually low prices to serve the needs of the Empire during the War, and was in consequence left without reserves, stood at the very edge of the precipice in the post-War period, with all its roots exposed to the winds of competition. The battle for cheapness raged around it with barbaric ferocity. The foreign steel manufacturer resorted to dumping, quoting much lower prices for export than for domestic consumption. A continual depreciation of the Belgian and German currencies, and the receipt of cheap German coal as a part of the reparations by France and Belgium in exchange for marks, further contributed to the lowness of import prices. The Tata Company felt the ground quake beneath its feet and in its letter to the Government of India, No. G. 1460, dated the 23rd October, 1922, it wrote as follows :—

> " A delay even of six months while examinations are made and opinions are invited may so endanger the industry that we shall be forced to close down the manufacture of steel."

Thus, help was urgently needed and promptly, unless the story of Indian steel was to come to an

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abrupt close. A Tariff Board was appointed in 1923 to investigate and recommend if the grant of protection to the Indian steel industry was advisable. Its attention was drawn by the Company to the following figures which supported its assertion that its profits had been dwindling fast from year to year :

Year		Net Profits
1920-21	...	Rs. 116·95 lakhs.
1921-22	...	,, 88·37 ,,
1922-23	...	,, 1·22 ,,

(Depreciation and Taxes had not been deducted from these figures.)

The Company enumerated the protective measures that had been taken in other countries to nourish this industry to maturity. It pointed out that in Canada, a system of high tariffs and bounties had helped to increase the production of steel ingots from 25,000 tons in 1894 to over a million tons eventually, and of pig iron from 86,000 tons in 1900 to nearly a million in 1920.

In Australia, a high tariff-barrier had been erected and imports of Indian rails into that country would have to pay a duty of 75*s*. to 85*s*. per ton. Also, bounties had been granted to local manufacturers, except in instances in which profits exceeded 15 per cent. per annum on the capital invested.

New Zealand had set aside £150,000 for bounties on iron and steel produced internally; South Africa had fixed a bounty of 15*s*. per ton of iron and per ton of steel; British Columbia a bountry of 3*s*. per ton on pig iron; France had imposed a high scale of duties since the war on all imports; and Spain on industries suffering from influx of foreign products;

Belgium had effected a special reduction in railway rates, which was equivalent to an indirect bounty or a subsidy of 30 francs per ton of pig, and in addition, taken steps to protect the industry by a high tariff; Italy had raised a high tariff wall around the iron and steel industry, remitted Customs duties on machinery imported for the industry, and granted exemption from income tax and super-taxes. Nor had Japan lagged behind; she had increased the tariff against foreign imports and granted bounties to domestic manufacturers.

In India alone, no steps had been taken to foster the development of iron and steel, although the Tata Steel Company had been supplying materials to the Indian Government and the Indian Railways at prices much below the market rates.

The Government realised that the steel industry occupied a prominent place in the system of national economy. It recognised that the latter had approximately 40,000 men on its pay roll, paying over a crore of rupees in wages annually, had distributed in dividends and interest in the region of Rs. 70,00,000 during the preceding year, and in 1920-21, had contributed the following amounts to the Government :—

	Rs.
Income-tax and Super-tax ...	10,84,000
,, ,, (Supplementary) ...	63,000
Income-tax paid by employees ...	1,14,000
Post and Telegraph expenditure ...	36,000
Indirect taxation, customs duty, cesses, etc.	7,16,000
Railway freight on in-coming and out-going material	31,23,000
Total ...	51,36,000

Thus the total contribution of the Company to the wealth of India stood at over Rs. 2 crores a year.

Nor was that all. The Company had been selling about 34,000 tons of rails to the Palmer Railways at an average price of Rs. 122-8-0 per ton, although the price of rails of similar specification imported into India had been fixed by the Government of India at Rs. 156 a ton in 1922. This meant a saving of Rs. 11,39,000 to the country. The Company had also been supplying rails to the Bengal-Nagpur Railway at Rs. 110 a ton, adding another Rs. 6,90,000 to the wealth of India.

In the past, the contribution of the Tata Company to national welfare had been greater still. During the War, it sold 290,000 tons of steel to the Government at an average price of Rs. 150 a ton, when the same material from the United States of America—which was the only alternative source of supply—would have cost at least Rs. 350 per ton. Thus the Company had been responsible for a definite saving of nearly six crores of rupees, in addition to the two crores mentioned above.

In regard to the future, the Company pointed out that as its output was going to increase three times, its contribution to national wealth would be at least three crores annually in employment, wages, taxes, freight, etc. The capital invested would be about thirty crores and could be counted on to bring in ten per cent., or another three crores annually.

On the other hand, the economic burden of a protective duty on the country of twenty-three and a third per cent., which the Company requested the Government to super-impose on the revenue-duty

of ten per cent. which then existed, could only amount to two crores and eighty lakhs a year, of which the Company would obtain less than half, taking the annual consumption of steel in India at one million tons, the Company's production in the future at 400,000 tons and the average base price of imported steel at Rs. 120 a ton (1 million $\times 23\frac{1}{3} \times \frac{120}{100}$ = Rs. 2,80,000,00).

Thus, other things being equal, a clear case for protection existed, especially as the gain from it would have outweighed by far its total cost.

The Tariff Board that was appointed proceeded to discover if other things were equal. It enunciated the following principles right at the outset :

" (1) The answer to the question whether protection is necessary depends in the main on the difference between two prices :—

(*a*) the price at which steel is likely to be imported into India from abroad, and

(*b*) the price at which the Indian manufacturer can sell at a reasonable profit.

(2) If protection is found to be necessary, and the advantages to be derived from it are held to outweigh any objections which may exist, then the measures taken must be adequate to secure their purpose."

The Board explained this second principle more fully thus :

" The immediate object of the scheme of protection is the preservation of the industry as it exists at present. Its remoter, but equally important, object is to attract capital to the industry, and promote the development of India's natural resources.

From both points of view protection given must be adequate."

Owing to the establishment of modern and up-to-date plants in Belgium and Northern France on the ruins of those destroyed by the war; a general depreciation of Continental exchanges; a general contraction in the world's consumption of steel and a simultaneous expansion in its steel manufacturing capacity, the Board could not assess the probable prices of imported steel at higher figures than those given below:

	Per ton Rs.
Bars	140
Structural shapes; *i.e.*, angles, beams, channels, etc. ...	145
Rails, 30 lbs. and over ...	140
Plates, ordinary	150
Sheets, black	200
Sheets, galvanised ...	300

But whilst wages and prices abroad were falling fast, they were still on the up-grade in this country. The steel industry was still in its infancy, a stage in which experience has still to be bought. To get a concrete idea of the "fair selling price" of Indian steel, let us analyse it into the following three component elements:

(*a*) Works Costs;
(*b*) Overhead Charges; and
(*c*) Manufacturers' Profit.

(*a*) *Works Costs*:

The following table prepared by the Tariff Board gives a comparison of the works costs of 1921-22 with those of 1916-17:—

WORKS COSTS PER TON

	1916-17	1921-22	Percentage of increase
	Rs.	Rs.	
Pig Iron ...	18·54	34·47	86
Steel ingots ...	41·13	68·82	67
Rail Mill Products ...	75·17	116·00	54
Average Cost of all finished steel ...	77·23	120·41	56

The reasons for this great increase in the works costs per ton, as enumerated by Tatas and accepted by the Board, were as follows :—

(*i*) A rise in the cost of coal from Rs. 3·8 to Rs. 8 a ton between 1916-17 and 1921-22, coupled with a simultaneous deterioration in its quality, which factors were responsible for a rise of Rs. 8·4 in the cost of pig iron per ton and Rs. 18 in the cost of rails per ton.

(*ii*) An increase of 40 to 50 per cent. in the wages of labour.

(*iii*) A general increase in the price of purchased materials and stores.

(*iv*) A rise in the cost of operating the steel furnaces, consequent on the decline in the average output from 34,750 tons to 26,000 tons per furnace.

(*b*) *Overhead Charges* :

(*i*) Interest on working capital :

The Company submitted that between 1916-17 and 1921-22, the amount of working capital re-

quired had increased from Rs. 100 lakhs to Rs. 600 lakhs, although the outturn of steel had gone up by only 27 per cent. The Tariff Board, however, pared down this figure of Rs. 600 lakhs to Rs. 200 lakhs, the interest allowed on these Rs. 200 lakhs at $7\frac{1}{2}$ per cent. per annum being Rs. 15 lakhs.

(*ii*) Bombay expenses and Agents' commission :

The figure allowed for these items was Rs. 7·31 lakhs in both 1916-17 and 1921-22.

(*iii*) Depreciation :

In 1916-17, the amount allowed for depreciation was Rs. 21·5 lakhs. The replacement cost of the old plant in 1921-22 was figured at Rs. 600 lakhs. The amount of depreciation allowed on this sum at $6\frac{1}{4}$ per cent. per annum was Rs. 37·5 lakhs.

The total overhead charges in 1921-22 thus worked out to (Rs. 15 lakhs + 7·31 lakhs + 37·5 lakhs =) Rs. 59·81 lakhs, which sum was distributed between 125,873 tons of finished steel and 107,000 tons of surplus pig iron according to certain principles, yielding a figure of Rs. 38·24 tons per ton of steel for overhead charges.

(*c*) *Manufacturers' Profit* :

The Board put the rate on ordinary shares at 10 per cent., and on the balance of the capital allowed the rates that the Company had actually paid in the past. The details were as follows :—

	Amount.	Rate of interest	Interest payable.
	Rs. lacs.	Per cent.	Rs. lacs
Ordinary and Deferred shares	156.75	10	15·67
First Preference shares ...	75.00	6	4.50
Second Preference shares ...	168.25	7½	12 63
Total ...	400 00	8.2 (Av.)	32.80

Distributing Rs. 32·8 lacs—given in the third column above against " Total "—between the total outturn of steel and the surplus pig iron produced in 1921-22, the incidence per ton of steel on this account worked out to Rs. 20·96.

From these figures, the Board calculated the " fair selling price " of a ton of steel as follows :—

		Rs.
(*i*) Works costs	...	120.41
(*ii*) Overhead charges	...	38.24
(*iii*) Manufacturer's profit		20.96
Total	...	179.61 *or*

in round figures, Rs. 180 per ton.

But as the average price realised by the Tata Company in 1921-22, on all finished steel, was only Rs. 159 a ton, which in 1922-23 had fallen further to Rs. 142·56 per ton, the Tariff Board concluded, " at the present level of prices and with the present customs duties (of 10 per cent.) the manufacture of steel in India can only be carried on at a loss."

The Board's estimate of Future Cost of Production and Selling Price :

To make matters worse, the works costs had risen from Rs. 120·41 in 1921-22 to Rs. 130 by

1923-24, owing to the operation of the following factors :—

(*i*) A rise in the price of coal;
(*ii*) the comparatively low output of the steel furnaces; and
(*iii*) the growing diseconomy of having to operate parts of the plant, such as the Rolling Mills, which were fast becoming obsolete.

In regard to coal, no relief, until April, 1925, was possible; for the price of coal charged to the Tata Company had been fixed under a twenty-five year contract at a figure eight annas a ton higher than the price paid by the Railway Board for the same quality of coal, which latter price, in turn, had been fixed by a three-year contract, beginning in April, 1922. The criticism that these long term contracts into which the Tata Company had entered were "ill-judged," the Tariff Board in 1924 answered thus :

> " . . . . Since the Railway Board is by far the largest purchaser of coal in the market, any firm which can secure supplies at or about the price which the Board is paying should have a reasonable assurance that the price will be below and not above the ordinary level. These expectations have been falsified recently owing to causes which could not be foreseen, but when the three-year contracts made by the Board expire, the Company will no doubt again secure its coal at a reasonable price."

The introduction of the new duplex process was expected to enhance considerably the outturn of steel ingots, but since India lacked experience in the operation of this process, best results could be achieved only with time. Again, the new mills could be counted on to bring considerable economies in their train, but their output in turn was essentially a ratio of the outturn of steel ingots, and dependent on the production of ingots by the steel furnaces.

Although Mr. Whitworth, the Chief Mining Engineer, Railway Board, in his evidence before the Tariff Board, stated that it was doubtful if the price of good Jherria coal sold to the Railways would ever fall lower than Rs. 9 per ton, the Tariff Board believed that in view of the contemplated improvement of railway facilities, the equipment of deeper mines with electrical coal-cutting machinery, and the exploitation of new coal fields, it was a sober supposition that the average price of coal would drop to somewhere between Rs. 8 and Rs. 9 per ton in a few years. Bearing in mind this probable fall in the future price of coal, also the possibility of better utilisation of surplus gases and adoption of measures of fuel economy by Tatas, the Board came to the conclusion that the works costs at Jamshedpur were bound to fall ultimately from about Rs. 130 to a figure in the region of Rs. 100 a ton, although owing to the existence of numerous incalculable factors, it was impossible to predict with reasonable accuracy the rate of this fall.

The Manufacturer's Profit :

The replacement cost of iron and steel works with a capacity of over 600,000 tons of pig iron and over 400,000 tons of finished steel was assessed by the Board

at Rs. 15 crores, based on calculations exhibited below :—

	Rs. Lacs.
Original cost of old block ...	400
Collieries	200
Greater Extensions	1,500
Total ...	2,100
Add—	
Allowance for increased cost of replacing the old block at revised prices	100
Grand Total ...	2,200
Deduct—	
(1) Capital expenditure on the collieries	200
(2) Expenditure from the depreciation fund	250
(3) Excess expenditure on American purchases and freight, etc. ...	250
Final Total ...	1,500

The Board wrote up the old plant from Rs. 4 crores to Rs. 5 crores to allow for the rise in price since before the War. It deducted the Company's expenditure on its collieries from its capital account, as, in its opinion, they should be treated as a separate venture. It wrote down the " Greater Extensions " from Rs. 15 crores to Rs. 10 crores to allow both for the reduction in the replacement value of the plant that had been purchased in America at high prices, and for the fact that a portion of the expenditure on the new plant had been incurred merely to replace the old.

In sum, the replacement cost of the Jamshedpur iron and steel works was assessed at Rs. 15 crores. Allowing for an average rate of 8 per cent. on the fixed capital—a rate at which the entire capital of the Company had been raised—the Board found that a sum of Rs. 120 lacs had to be earned from the sale of iron and steel.

Although 107,000 tons of surplus pig iron had been sold at an average price of Rs. 94 a ton in 1921-22, leaving a profit of about Rs. 50 a ton, in view of the fact that three Companies were competing to grasp the Indian and export markets for pig iron, and the price, particularly in the export market, had fallen appreciably, it was not considered safe by the Board to estimate the sales of pig iron at more than 40,000 tons, nor the average profit at more than Rs. 20 a ton. This meant a profit of Rs. 8 lacs on pig, leaving the balance of Rs. 112 lacs to be realised from steel. Taking the yearly output of steel at 420,000 tons, the incidence worked out to Rs. 26·47 per ton.

(*i*) Interest on working capital :—

Overhead charges.

The total working capital, exclusive of the provision for the collieries, was estimated at Rs. 350 lacs, made up as follows :—

	Rs. Lacs.
Stores and spare parts of all kinds ...	110
Raw materials and refractory bricks ...	75
Outstanding and stocks of finished products ...	165
Total	350

Interest at 7½ per cent. on this capital amounted to Rs. 26·25 lacs.

(*ii*) Bombay expenses and Agents' Commission :—

The Board accepted the Tata Company's estimates of the head office expenses at Rs. 4 lacs, and of the Agents' Commission under the terms of their contract at Rs. 8·4 lacs.

(*iii*) Depreciation :—

Taking an all-round rate of 6¼ per cent. on Rs. 15 crores, the allowance for depreciation amounted to Rs. 93·75 lacs.

The Fair Selling Price of Steel.

The Board fixed the fair selling price of steel at Rs. 180 a ton, which was calculated to have given the Indian manufacturer a reasonable return on his capital in 1921-22. But in view of the rise in works costs, alluded to before, and the impossibility of achieving maximum production before 1926-27, it was impossible for the Tata Company to realise an adequate profit in the earlier years by selling its steel at Rs. 180 a ton.

Having estimated the probable import prices as well as a fair selling price for Indian steel, the Board proceeded to determine the form and degree of protection to be given to Indian steel.

In regard to the form of protection, the Board admitted the validity of the Fiscal Commission's assertion that a bounty was the best means of assisting a basic industry like the steel industry, but had to rule this method of assistance out of court, as it would have been impossible for the Government to afford a bounty during those years of budgetary

difficulties. The Board then considered a scheme which was a synthesis of tariff duties and bounties, and eventually advocated import duties for most kinds of steel, except in the case of rails and fish-plates, for which it recommended a sliding scale of bounties.

In regard to the degree of protection, the Board laid down the principle that " the assistance granted should suffice to give the Company :—

" (*a*) when they reach their full production a fair return on their capital outlay after meeting all overhead charges, provided the works expenditure is reduced to a reasonable figure, and

" (*b*) the minimum of assistance required to tide the industry over a difficult period."

The specific duties proposed by the Board were as under :—

	Rs. per ton.
Steel :—	
Structural shapes, *i.e.*, beams, angles, channels, etc., unfabricated ...	30
Ship, tank and bridge plates ...	30
Common merchant bars and rods ...	40
Light Rails (under 30 lbs.) ...	40
Black sheets, plain or corrugated ...	30
Galvanised sheets, plain or corrugated...	45
Wrought Iron :—	
Angles, Channels ...	20
Common bars ...	35

Except in the case of sheets and structurals, these rates roughly bridged the difference between what appeared as the probable price of imported steel and the price considered adequate by the Board

to bring in a reasonable profit to the Indian manufacturer.

In regard to sheets, no data as to their cost of manufacture existed, since the Tata Iron and Steel Company had not yet set its sheet mills in motion. The Company's estimates of the works cost of black sheets at Rs. 149 a ton and of galvanised sheets at Rs. 194 a ton, were, however, rejected by the Board as unduly low. The latter firmly believed that protection was essential before the manufacture of sheets could be established in India, and recommended a scale of duty supposed to be adequate for the purpose.

In the case of structurals, the duty was fixed at Rs. 30 a ton, although, according to the formula or the principle accepted by the Board, the rate should have been Rs. 35 a ton, the probable import price being estimated at Rs. 145 a ton. This lower scale of protection was recommended by the Board to lighten, as much as was possible, the incidence of the price of structurals on the engineering industries and the Railways.

It was regarded necessary to recommend duties on wrought iron and raise its price, since the latter could be used in place of steel for several purposes, and would, it was feared, displace the superior metal if its price were substantially lower than that of steel.

In regard to medium and heavy rails and fishplates, the Board rightly held that a bounty, and not an import duty, was the proper means of assistance, since the prices that the Company was to receive for its rails had already been fixed by the contracts it had made with the Railway Board and certain

Railway Companies. The duration and the prices fixed under those contracts, all of which took effect from 1st April, 1920, were as under :—

Name of Railway Administration.	Duration of Contract.	Prices fixed per ton.	
			Rs.
Bengal-Nagpur Railway	5 years till 31st March 1925.	Rails	110
		Fishplates	140
Palmer Railways ...	6 years till 31st March 1926.	Rails	122.8
		Fishplates	152.8
Railway Board ...	7 years till 31st March 1927.	Rails	130
		Fishplates	160

Events, however, proved that the Company was mistaken in regard to its estimate both of the future market price of rails and its cost of manufacture. But since nearly all the Railways with which the contracts had been made were Government Railways, in entailing a heavy loss to the Company, those contracts brought in a substantial gain to the taxpayer. The Tariff Board took this fact into consideration and recommended bounties on rails and fishplates according to the following sliding scale :—

	Rs. per ton.
1924-25 ...	32
1925-26 ...	26
1926-27 ...	20

The reasons for recommending this sliding scale were two. First, as the contract with the Bengal-Nagpur Railway was due to expire in March, 1925, that with the "Palmer" Railways in March,

1926, and that with the Railway Board in March, 1927, the price that the Company would obtain for its rails was expected to swing closer to the world price-level as each year elapsed; second, costs were expected to fall as production expanded.

This assistance in the shape of a bounty was in addition to the duty of 10 per cent. *ad valorem* which then existed, and was to be replaced, in accordance with the Board's recommendations, by a specific duty of Rs. 14 a ton.

The times, however, were such that the Board's proposals could be no better than an essay in intelligent speculation. The political and the economic structure of the world was trembling on its foundations. Abnormal occurrences such as dumping and currency depreciation, explained and condoned by the phrase, "c'est la guerre," were rife. The future course of world prices was uncertain, although a decided drop in the cost of manufacture in India was probable. Under these conditions, the Board thought it wise to limit its proposals to a period of three years, and arm the Governor-General-in-Council with powers to impose additional duties, in case an unforeseen drop in the price of imported steel occurred.

Supplementary Protection.

The Board's fears were soon justified, for not many months after the adoption of the Steel Industry (Protection) Act in June, 1924, such great changes came that the Tata Iron and Steel Company was compelled in self-preservation to address an application to the Government of India, requesting that the Governor-General-in-Council should exer-

cise his powers under section 3 (4) of the Indian Tariff Act, 1924, and increase the duty leviable on certain articles that were being "imported into India at such a price as (was) likely to render ineffective the protection intended to be afforded to similar articles manufactured in India."

This application was referred to the Board for enquiry in October, 1924. The latter found that since the adoption of the Steel Industry (Protection) Act, the prices of imported steel had fallen to figures much lower than those assumed as basic in the scheme of protection. Although the prices of British bars and plates had not varied much, a drop of 10s. a ton had occurred in the British price of structural sections (beams, angles, channels, etc.) since the latter part of 1923. The rupee-sterling exchange had risen from 1s. 4d. to 1s. 6d., entailing an automatic fall of about Rs. 16 a ton in the price of imported steel from both Great Britain and the Continent. Owing to the collapse of the French and Belgian exchanges, the price of all Continental steel had dropped to a very low level, though it had rallied sharply in April when France took steps to stabilise the exchange. But since April, it had kept uniformly on the down-grade, reaching almost the pre-War level by the beginning of October. To give a concrete idea, since the latter part of 1923 the Belgian prices had dropped by the following amounts :—

	£.	s.	d.
Bars ...	1	15	0
Beams ...	1	10	0
Plates ...	1	4	0
Angles ...	1	10	0

To worsen the situation, the wearing away of the effects of the Ruhr occupation and a drop in the price of Continental steel led to heavy importations of bars and structural sections into India in the latter half of 1923-24. Further, large orders were placed early in 1924 in the hope that the steel reaching India before the new duties came into force, would be able, later, to command a much higher price. But as most of the steel had been held up owing mainly to transport difficulties in Belgium, India continued to be flooded with importations even after the new duties had begun to operate. The resultant accumulation of stocks drove down the price of Continental steel and widened the gap between British and Continental steel prices, the difference being as under :—

	£.	s.	d.
Bars ...	3	15	0
Beams ...	3	0	0
Plates ...	2	2	0

In face of this fall in the prices of Continental steel, which had begun to oust British steel from the market, the Tata Company found it impossible to realise an average price of Rs. 180 a ton for bars and plates, or Rs. 175 a ton for structural sections. The actual prices realised were :—

	Rs. per ton.
Bars ...	158
Structural sections ...	156
Plates ...	160
Light rails ...	149

Even at this low level of prices, the sale of Jamshedpur steel lagged behind production and heavy stocks piled up, which could not be disposed of except at a great loss. The Board scrutinised the position with due care and concluded that in order to enable the Company to realise a fair selling price for its products, it was necessary to increase the duties on all kinds of imported steel. Its recommendations are summarised below :—

Class of material.	Existing duty. Rs. per ton.	Proposed duty. Rs. per ton.
Steel bars ...	40	75
Iron bars ...	35	65
Steel structural sections ...	30	65
Iron structural sections ...	20	50
Plates ...	30	55
Black sheets ...	30	52
Galvanised sheets ...	45	78
Rails and fishplates, medium and heavy ...	14	30
Rails and fishplates, light	40	75

The Government concurred with the Tariff Board that the classes of rolled steel which needed additional protection were bars, structural sections, plates, rails and fishplates (in so far as their selling price was not determined by long term contracts), and black and galvanised sheets; but instead of imposing import duties as the Board had recommended, the Government favoured a special bounty not exceeding Rs. 50 lacs per annum to be paid to the Tata Company on 70 per cent. of the production of ingot steel at the rate of Rs. 20 per ton, during the period October, 1924, to September, 1925. The reasons for this preference for a bounty, as stated

by Sir Charles Innes, the Commerce Member of the Government of India, were three. First, additional duties on imported steel would have increased the burden on the narrow back of the consumer by about Rs. 2 crores and crippled or injured numerous industries, such as the Railways and the Mining Industry, which depended for their raw materials on the Steel Industry. Second, additional duties would not have achieved their purpose, as the rise in the price of steel would not have been in proportion to the increase in duties, since heavy accumulations of stocks still awaited disposal. Third, the financial stringency which had led the Board to rule out bounties in June, 1924, no longer existed. The actual revenue accruing from the duties enforced in June, 1924, alone had exceeded the estimated figure by over Rs. 70 lacs, which sum was available to meet a major part of the cost of the proposed bounty.

This, however, was an emergency measure, which came up for revision in June, 1925, when the Tariff Board instituted its third enquiry. In its Representation, dated 9th/10th June, 1925, to the Government of India, the Tata Iron and Steel Company wrote as follows :—

> " The prices of foreign steel entering India as compared with last year.....have decreased considerably. As an instance we may state that the present c.i.f. landed price of Continental bars imported into India is Rs. 129·16 as compared with Rs. 145·5....., while exchange today stands at 1s. 6d. and has

> for some time stood at 1s. 5d.-5/16 to 31/32 as compared with 1s. 5·53d. in September last year."

The French exchange had altered from 558 francs to Rs. 100 in September, 1924, to 778 in June, 1925, and the Belgian exchange from 690 to 785.

While in the case of Belgian steel, a rise in the freights from Antwerp had more than offset the drop in the price of Belgian steel that had resulted from a fall in the Belgian exchange, no such factor existed to counteract the decline in the British prices of steel. The following table which appears on p. 6 of the Tariff Board's Report of 1925, gives the extent to which the British prices had fallen since the Board's original enquiry :—

	Per ton.		
	£.	s.	d.
Beams and other structural sections	1	10	0
Bars ...	1	5	0
Plates ...	0	12	6

The Tata Company's position was far from enviable. The hope that after the termination of the long term contracts with the Indian Railways, the Steel Company would be able to realise a better price in competition with British standard rails than was provided for in the contracts, vanished into thin air when some of the Indian Railways began to purchase or contemplate the purchase of rails from the Continent at much lower prices. The East Indian Railway placed an order for 12,028 tons of rails in Germany when renewing its contract with the Steel Company. The Bengal-Nagpur Railway practically insisted on a price of Rs. 124 a ton on

the ground that they could buy Continental rails at that price. The rate of bounty being only Rs. 26 a ton, Tatas realised only a price of Rs. 150 a ton for their rails, instead of Rs. 181 a ton, contemplated for supplies outside the contracts, in the first report of the Tariff Board.

For the year 1924-25, the total orders received by the Steel Company outside the contracts with the Palmer Railways and the Indian Railway Board, were 30,495 tons, and the average price obtained by the Company was Rs. 163·82 per ton, inclusive of the bounty, instead of Rs. 187 per ton, which the Tariff Board had hoped the Steel Company would be able to obtain that year. Thus the difference between the Tariff Board's estimate and the actual realisations of the Company was Rs. 7,06,874 in the year 1924-25.

In regard to the future, assuming the demand of the Bengal-Nagpur Railway at 14,052 tons of rails per year, which was the yearly average purchased by that Company during the preceding three years, it was expected that the amount realised by Tatas would fall short of the Tariff Board's estimate to the extent of Rs. 4,35,612. In its Representation, dated 2nd July, 1925, to the Tariff Board, the Steel Company further pointed out that since the contracts with the Palmer Railways were due to terminate in March, 1926, *i.e.*, a year before the expiry of the Steel Industry Protection Act in March, 1927, the Steel Company would obtain Rs. 10,88,596 less after the expiry of the contracts than the Tariff Board had anticipated, assuming the price of rails outside the contracts at Rs. 144 a ton, inclusive of a bounty of Rs. 20 in

1926-27, and the requirements of the Palmer Railways at 35,116 tons that year, which had been the actual yearly average during the three preceding years.

In view of the low Continental price level on which the new contracts had been based or were expected to be based, the Steel Company pleaded that the bounty of Rs. 20 per ton should be continued until March, 1927.

Making a full allowance for factors such as the uncertainty of the relative proportions of ' bounty ' steel and ' other ' steel and the possible effects of the rise in the exchange on the cost of production of Indian steel; and drawing up estimates of future prices of imported steel and of the " fair selling price " for the Indian manufacture, the Tariff Board recommended that a bounty be paid on steel manufactured in India between the 1st October, 1925 and the 31st March, 1927, on the following terms :—

"(1) The bounty should be paid only to firms or companies manufacturing, mainly from pig iron made in India from Indian ores, steel ingots suitable for rolling or forging into any of the kinds of steel articles specified in Part VII of Schedule II to the Indian Tariff Act, 1894.

"(2) The bounty should be paid on steel ingots manufactured by such firms or 'companies, ... at the rate of Rs. 18 a ton on 70 per

cent. of the total weight of the ingots manufactured in each month.

" (3) The total amount of the bounty payable under this Resolution in the 18 months ending 31st March should not exceed Rs. 90 lakhs."

The Government of India agreed that further assistance was required, but reduced the rate of bounty from the proposed figure of Rs. 18 per ton to Rs. 12 per ton, and the maximum amount of assistance from Rs. 90 lacs to Rs. 60 lacs, the Legislative Assembly accepting the Government of India's proposal on the 15th September, 1925.

On the 7th May, 1926, the Tata Iron and Steel Company, Ltd., made another representation to the Tariff Board claiming that protection was still necessary if the Indian steel industry was to develop or indeed to survive, and adduced facts and figures in favour of its claim. It pointed out that although only two years had elapsed since the first grant of protection in 1924, the Company had already reduced its costs below the figure of Rs. 100 a ton in the case of all finished steel, excluding sheets, which reduction the Board had expected Tatas to achieve in the fourth year of protection. The advantage of reduced costs, however, was more than counteracted by a continuous fall in the prices of imported steel. Most of the foreign countries were dumping their excess production in this country at a price lower than their domestic price. France and Belgium were indulging in another type of dumping, *viz.*, " exchange " dump-

ing, *i.e.*, dumping which was the result of depreciated exchanges. Thus in September, 1925, when the Legislature passed the resolution for additional bounties, the French and Belgian sterling exchanges or cross rates stood at 102 and 111 respectively. By the 7th May, 1926, they had depreciated 50 per cent. approximately, standing at 155 and 159 respectively. In consequence of this depreciation, these countries were able to lower their prices by about 33 per cent. and thus render nugatory the protection recommended by the Tariff Board.

In order to shield the steel industry from the injurious effects of exchange variations in future, the Steel Company suggested that, in addition to a fixed basic duty based on prices in gold standard countries, there should be a variable additional duty varying in proportion to exchange deviations from the par.

Further, as Tatas stated on p. 8 of their Representation, the intensity of competition from England had forced them to accept a price of Rs. 105 per ton for rails f.o.r. Works in respect of supplies outside the contracts. In consequence they could realise only Rs. 125 a ton instead of Rs. 148·50 a ton contemplated in Table V, Annexure A to the Report dated 2nd September, 1925.

Even the Tariff Board, which was rather critical of the Steel Company's assertion that certain Railway Companies were trying to exclude rails of Indian manufacture in favour of British, made the following admission :—

> " The success of the policy of protection will largely depend upon the co-operation which the Gov-

ernment receives from railways, the largest purchasers of steel in India, and it is of the utmost importance that they should offer every possible encouragement to the use of Indian material. . . . . It is essential that the railways should arrange to purchase the whole of their requirements of rails in India so far as they can be produced in the country."

(P. 74 of the Tariff Board Report, 1926.)

Exposed to a kaleidoscopic play of international rivalries and faced with dumping in Protean forms, the Steel Company had no alternative but to lean back on the Government again. The Tariff Board scrutinised the situation and found that although the stage was being set for stability in business, prosperity was not yet. The Steel Company had not been able to pay any substantial dividends on its share capital. The actual surplus during the period of protection had fallen short of the Tariff Board's strict estimate by Rs. 16 lacs, as will be seen from the following table, reproduced from p. 15 of the Tariff Board Statutory Enquiry, Vol. I, 1926 :—

	Production.	Anticipated surplus.	Realised surplus.	Difference.
	Tons.	Rs. lacs.	Rs. lacs.	Rs. lacs.
All steel ...	925,757	531·13	435·56	95·57 deficiency
Tinbar ...	116,000	66·55	17·97	48·58 ,,
Protected steel	809,757	464·58	417·59	46·99 ,,
Pig iron ...	411,000	32	63	31 excess
Pig iron and protected steel.	...	496·58	480·59	16 deficiency

This figure of Rs. 16 lacs was inclusive of an allowance of Rs. 31 lacs on account of the surplus on pig iron, but exclusive of the deficiency on account of tinbar which stood at Rs. 48·58 lacs, this exclusion being made since the Board was of opinion that a mistake made by the Steel Company in entering into an agreement to supply tinbar to the Tinplate Company at a price which was not to be affected by the imposition of duties, should not be rectified at the expense of the taxpayer.

If, however, the deficiency on account of tinbar were allowed for, and no adjustment made on account of surplus on pig iron, the figure for total deficiency should have stood at (16 + 48·58 + 31 =) 95·58 lacs.

Even admitting that the actual surplus during the period of protection had fallen short of the anticipated surplus by only Rs. 16 lacs instead of Rs. 95·58 lacs, it is scarcely possible to justify the following utterance of the Tariff Board :—

> " . . . . during a period of severe depression in the steel trade, the position of the Company has been carefully safeguarded and the protection so adjusted as to enable the industry to make considerable progress."

Future Works Costs :

In estimating future Works Costs, the Tariff Board analysed expenses into the following four heads :—

(*a*) Labour,
(*b*) Miscellaneous stores and supplies,
(*c*) Coal, and
(*d*) Ores and fluxes.

(*a*) *Labour* : In its first report, the Tariff Board wrote :—

> " The labour cost per ton of finished steel at Jamshedpur is unquestionably higher than the corresponding cost in Western countries. This is due not only to the higher wages paid to the skilled labour imported from abroad, but also to the much larger number of unskilled and semi-skilled labourers employed, so that the total wages per ton come out higher."

So far as covenanted hands went, the Steel Company had reduced their number from 229 in September, 1924, to 161 in June, 1926. The Tariff Board was quite satisfied with this reduction in imported labour. But, since the numbers employed by Tatas were found to be excessive as compared with those engaged for a proportionate output by the Indian Iron and Steel Company, the Board recommended the following reductions :—

Departments	Proposed reductions in numbers employed.
Coke ovens and blast furnaces	... 2,000
Old mills	... 2,850
Other departments .	... 1,500
	6,350

In other words, it was the opinion of the Board that the number of men employed should be reduced from a total of 26,290 to 19,940, to which was to be added 3,500 later to allow for the increase in output which the new development programme of the Company was expected to bring.

Thus, in the opinion of the Board, the numbers employed in 1933-34 should be about 11 per cent. less than in 1925-26. But as most of the re-

duction was to be effected in the lower paid ranks of labour, it could not be expected that the total cost of labour involved in the production of 600,000 tons of finished steel in 1933-34 would be less than Rs. 148·4 lacs, which was the figure for 1925-26.

(*b*) *Miscellaneous stores and supplies*: The Board was of the opinion that in view of the recent fall in the prices of some of these stores, the possible economies in the consumption of some of them and the future closing down of the old mills, where the consumption of stores was disproportionately high, the total expenditure on stores and supplies in 1933-34 should not exceed Rs. 124·0 lacs, which was over 50 per cent. higher than the figure for 1925-26, which stood at Rs. 81·2 lacs.

(*c*) *Coal*: In an early estimate, the Company had proposed to reduce its coal consumption, after allowing for surplus pig iron, from 4·09 tons in 1925-26 to 3·14 tons per ton of finished steel by 1933-34. The Tariff Board was satisfied with the proposed scale of reduction and felt that it would not be justified in insisting on a lower consumption than the figure of 3·14 tons suggested by the Company. On this basis, the total quantity required for the production of 600,000 tons of finished steel worked out to 1,884,000 tons of coal, and the total expenditure on this account, to Rs. 150·7 lacs, assuming the average price of coal as Rs. 8 per ton f.o.r. Works.

(*d*) *Ores, fluxes and other minerals*: The Board held that the expenditure on ores, fluxes and other minerals in 1933-34 for an output of 600,000 tons of finished steel should not exceed Rs. 92 lacs.

The Board was also of the opinion that the value of the by-products must be deducted from the gross expenditure before the true works cost of steel could be estimated, and suggested a reduction of Rs. 42 lacs on this account for 1933-34 in place of 37·5 lacs, which was the reduction for 1925-26.

The following table, which appears on page 28 of the Board's Report, sets out the total costs in 1925-26 and the Board's estimated figures for 1933-34 :—

	Gross Expenditure.		Incidence per ton.	
	1925-26	1933-34	1925-26	1933-34
	Rs. lacs.	Rs. lacs.	Rs.	Rs.
Labour ...	148·4	148·4	46·4	24·7
Stores and supplies.	81·2	124·0	25 3	20·7
Fuel ...	113·0	150·7	35·3	25·1
Ores, fluxes, etc.	52·4	92 0	16·4	15·3
Total ...	395·0	515·1	123 4	85·8
Credits ...	37·5	42	11·7	7·0
Net Total Expenditure.	357·5	473·1	111·7	78·8
Production of finished steel.	319,960 tons	600,000 tons	...	...

It will be seen from the above table that the Board expected Tatas to achieve a reduction of Rs. 32·9 per ton which was nearly 30 per cent. of the 1925-26 cost.

The Board considered each of the main classes of products separately and formed estimates of works costs for 1933-34, which, along with the

average costs for the period and the actuals for August, 1926, are tabulated below :—

Product.	Works costs per ton.		
	Actuals, August, 1926.	Estimates, 1933-34.	Estimated Average for the period.
	Rs.	Rs.	Rs.
Rails	79·6	61·6	71
Fishplates	116·4	90	103
Structural sections	105·3	69·1	81
Bars	99	77	88
Plates	103·3	80·3	92
Tinbar	71·4	55·4	63
Black sheets	164	122	143
Galvanised sheets	263·7	200	232
Sleepers	...	72	74

The Board then proceeded to estimate the future selling price of Jamshedpur steel, which is composed of the following usual items :—

(*i*) Works costs.
(*ii*) Overhead charges, consisting of
  (*a*) depreciation,
  (*b*) interest on working capital, and
  (*c*) Agents' commission, Head Office charges, etc.
(*iii*) Manufacturer's profit.

Overhead Charges :

Allowing for freight, duty, higher erection charges in India than abroad, the additions and alterations necessitated by climatic exigencies, and for the fall in the sterling price of the plant and equipment, consequent on the appreciation of the rupee exchange, the replacement value of the Steel Company's fixed assets, exclusive of its collieries, worked out to Rs. 12½ crores.

(*a*) *Depreciation* : Depreciation at 6¼ per cent. on Rs. 12½ crores amounted to Rs. 78 lacs per annum.

(*b*) *Interest on working capital* : The Tariff Board pared down the Steel Company's figure of Rs. 3·5 crores for the average working capital during the seven-year period, to Rs. 2·2 crores. The annual interest charge at 7 per cent. instead of at the 1923-24 figure of 7½ per cent. on this sum amounted to Rs. 15·4 lacs.

(*c*) *Agents' commission, Head Office charges, etc.* : The figure allowed for in respect of these items was Rs. 10 lacs a year.

The Manufacturer's Profit:

An average profit of 8 per cent was deemed reasonable. The total profit to be earned at this rate on Rs. 12½ crores amounted to Rs. 100 lacs.

The Board's estimate of charges above works costs :

The total amount to be earned above the works costs was as under :—

	Rs. lacs.
I. Overhead:	
Depreciation ...	78.0
Interest on working capital ...	15.4
Agents' commission, Head Office expenses, etc ...	10.0
	103.4
Less Chargeable to surplus pig iron	3.3
	100.1
II. Manufacturer's profit ...	100.0
Less Profit on surplus pig iron	5.7
	94.3
Total of I and II ...	194.4

The following table gives the average works costs, overhead and profit, fair selling price f.o.r. Works, based on the average output of the different steel products at Jamshedpur :—

Product.	Average output.	Average works costs.	Overhead and profit.	Fair selling price f.o.r. Works.
	Tons.	Rs. per ton.	Rs. per ton.	Rs. per ton.
Rails ...	195,000	71	39	110
Fishplates ...	7,000	103	45	148
Structural sections	70,000	81	39	120
Bars ...	90,000	88	41	129
Plates ...	30,000	92	42	134
Tinbar ...	50,000	63	24	87
Black sheets ...	13,000	143	42	185
Galvd. sheets ...	30,000	232	51	283
Sleepers ...	15,000	74	36	110

After making adjustments for losses on second class materials and cuttings, which fetch a lower price than the first class material, and for freight advantage or disadvantage as the case was, the Board arrived at the following average figures to which the price of the different kinds of imported steel had to be raised, if the Steel Company were to obtain its fair prices f.o.r. Works :—

	Rs. per ton.
Rails ...	... 118
Fishplates ...	... 156
Structural sections	... 120
Bars ...	... 129
Plates ...	... 133
Tinbar ...	... 87
Black sheets ...	... 183
Galvanised sheets	... 278
Sleepers ...	... 115

Probable Prices of Imported Steel:

To pass to the Board's estimates of future steel prices, at a time when the world was spinning down " the ringing grooves of change " and thick mists of uncertainty hung ahead, it was well nigh impossible to predict the future trend of steel prices with any reasonable degree of certainty. To add to the bewildering complications of dancing exchanges, export bounties and special railway freights for export steel, the Continental steel cartel sprang into being, comprehending Germany, France, Belgium and Luxemburg within its fold. Indeed the operations of a cartel usually lead to a rise in prices, but who could tell that they would not lead to the formation of a joint sales organisation, which would reduce costs and bring in profits even at lower prices?

The Tariff Board analysed the situation as best as it could, and thought it safe to take the 1926 prices of Continental steel as a basis for its calculations. Since British steel prices after 1926 had been affected by the coal dispute in Great Britain, the Board proposed to base its estimates on the prices that had prevailed during the first four months and seemed to be fairly representative of the level which could be expected to rule during the period of protection.

Making allowances for landing and other charges, the Tariff Board formulated the following conclusions regarding the landed prices (duty free) of those kinds of steel, British or Continental, which were likely to be imported into India and enter into competition with Indian steel :—

Product.	British.	Continental.
	Rs. per ton,	Rs. per ton.
Rails ...	105	...
Fishplates ...	150	...
Structural sections ...	104	86
Bars ...	108	90
Plates ...	115	92
Black sheets ...	153	122
Galvanised sheets ...	240	...
Sleepers ...	...	105

Method and Amount of Protection :

In the case of rails, fishplates, and galvanised sheets which were imported exclusively from the United Kingdom the determination of the scale of protection was merely a matter of ascertaining the difference between their fair selling price in India and their imported price.

In the case of steel sleepers, the existing revenue duty was considered sufficient even to meet Continental competition, but it was thought desirable by the Board to remove steel sleepers from the non-protected to the protected part of the schedule and recommend a duty of Rs. 10 per ton on this item.

In the case of structural sections, bars, plates, and black sheets, the problem was complicated by the fact that they were imported into India both from the United Kingdom and from the Continent at widely divergent prices. There seemed to be two practical methods by which adequate protection could be secured to the Indian steel industry, namely, a weighted average system of duties and a scheme of differential duties.

The Weighted Average System of Duties :

Under the weighted average system, a single scale of duties was to be imposed after determining the average import price of foreign steel with reference to the proportion which the Steel Company's sales of standard material were expected to bear to its sales of non-standard steel during the period of protection. The duties on this system of calculation worked out as follows :—

TABLE I

	Fair selling price.	Weighted average import price without duty.	Duty required.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Structural sections ...	120	95	25
Bars	129	94	35
Plates	133	107	26
Black sheets ...	183	128	55

The following table gives the estimated duty-paid prices of British and Continental steel as compared with the " fair selling price " of Indian steel under this system :—

TABLE II

	Fair selling price of Indian steel.	British steel.	Continental steel.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Structural sections ...	120	129	111
Bars ...	129	143	125
Plates ...	133	141	118
Black sheets ...	183	208	177

Differential Duties :

If, on the other hand, a scale of differential duties were adopted, the duties on each class of steel after making an adjustment for the difference in quality in the proportion which the sales of Indian standard steel were expected to bear to those of Indian non-standard material during the period of protection, worked out as below :—

TABLE III

Products.	British steel.	Continental steel.
	Rs. per ton.	Rs. per ton.
Structural sections ...	19	30
Bars ...	26	37
Plates ...	20	36
Black sheets ...	35	59

The following table gives the fair selling prices of Indian steel as compared with the duty-paid prices of British and Continental steel under this system :—

TABLE IV

	Average fair selling price.	British steel.	Continental steel.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Structural sections ...	120	123	116
Bars ...	129	134	127
Plates ...	188	185	128
Black sheets ...	183	188	181

The system of uniform duties had indeed the advantage of simplicity in administration, but the disadvantages of the scheme were far too numerous to recommend it for adoption. History had definitely given its verdict against it. The Board had based its original scheme of protection on the weighted average system, but a heavy fall in Continental steel prices had led to a substitution of Continental for British steel, thus invalidating the Board's assumptions regarding the proportion of the Steel Company's sales against Continental material, and nullifying the protection recommended by the Board. And who could tell that History would not repeat itself if the weighted average system were once again adopted as the basis of protection?

Nor was that all. As will be evident from Tables II and IV above, a system of uniform duties would have imposed a heavier burden on the consumer of standard British or Indian steel than a system of differential duties, and thus unduly raised the cost of rolling stock, railway bridges, large buildings and other works, where standard steel, which is more reliable in quality and strength than ordinary Continental steel, must be used, since any defect in the construction of these works would seriously endanger public safety. Further, as the cost of factory construction, numerous municipal undertakings, and of the manufacture of machinery in India, would have gone up for the same reason, the

industrial development of India in general would have been greatly hampered.

Nor was the argument that the additional burden on the consumer of British steel would be offset by the lower price of Continental steel as strong as appears *prima facie*. As will be evident from Table II above, the margin between British and Continental prices was greater than Rs. 7, which figure is a monetary measure of the difference in quality between the two classes of steel; but what was there to prevent the price of Continental steel from going up to cover up at least a part of this excess? It was almost certain that the consumer would not reap the benefit of the full difference between the prices of British and Continental steel that would arise under a system of uniform duties.

Thus the scales were clearly dipped in favour of differential duties. Even the argument that this system was administratively impracticable had considerably weakened, since the narrowing of the gulf between British and Continental prices had greatly lessened the inducement for exporters to re-ship Continental steel from British ports.

Tariff Board's Recommendations.

In view of the above facts, the Board favoured the system of differential duties; but in the interests of stability recommended a basic non-variable duty on the scale shown in Table III above as applicable to British steel; and an additional duty on steel of non-British origin equivalent to the difference between the two scales of duties given in the same Table. The following statement gives a comparison of the duties

recommended by the Board and the duties that then existed :—

Products.	Proposed duties.		Existing duties.
	Basic duty.	Additional duty.	
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Rails .	13	..	14 *plus* bounties
Fishplates	*Ad valorem* duty according to revenue tariff, minimum Rs. 6.		14 ,, ,,
Galvanised sheets	38 (if duty on spelter were retained) 30 if duty on spelter were removed)	...	15
Sleepers ...	10	..	..
Structural sections	19	11	30
Bars ...	26	11	40
Plates ...	20	16	30
Black sheets ...	35	24	30

Flexibility of Additional Duties.

Whereas the relative stability of British prices rendered unnecessary any provision for flexibility in the scale of basic duties, the probability of price-fluctuations on the Continent, brought about either through unforeseen exchange variations or through the deliberate efforts of the European Steel Comptoir, necessitated a provision that the additional duties, superimposed on the basic duties, should be flexible, falling or rising according as import prices of Continental steel rose or fell. The Select Committee of the Assembly introduced flexibility into the basic duties as well, by providing that although in no circumstances could they be revised in a downward direction, they might be raised if an appreciable fall in British prices occurred.

An Era of Hope:

The Steel Industry (Protection) Act of 1927 was passed at a time when the clouds of depression seemed to be lifting, and a gleam on the plash of dark waters was visible. The financial reconstruction of Austria, Hungary, Greece and Bulgaria brought about through the machinery of the League of Nations; the stabilisation of the franc, the lira and the belga; the formulation of the Dawes Plan which had given a semblance of settlement to the Reparations problem; the growth of amicable relationship between France and Germany, and of a spirit of co-operation between the Central Banks of the United States, Germany and England—all these factors had inspired the hope that the dawn of prosperity was about to burst. But it was false hope, for it was not long before the " vision splendid " faded away and a currency, credit, and trade crisis swept the world, driving it into the shades of a New Dark Age.

The Currency, Credit and Trade Crisis.

The Wall Street boom of 1928-29 in the U.S.A. combined with the latter's refusal to accept goods in payment of Reparations or commercial debts, and, later, speculation in the Paris Bourse, caused masses of gold to flow first into America and then into France. Normally such gold-movements would have led to a fall in interest rates and/or to a rise in internal prices, which would have caused an efflux of gold and rectified the situation. But the policy of gold " sterlisation " pursued by these two countries prevented this normal corrective from coming into operation. In consequence, the European countries that had lost gold during this period,

suffered from deflation, falling prices, falling reserves, depreciated securities, industrial depression and banking collapses.

The other factors that had contributed to this fall in prices and depression in general, were the mechanisation of agriculture and industry which had resulted in reduced costs, and over-production; and the greatly increased preference for liquid assets as compared with long-term securities, fostered by the uncertainty and instability that ruled everywhere.

This drop in prices curtailed profits, checked investments, created budgetary difficulties by reducing the value of taxable assets, imperilled the stability of Governments, and increased the burden of indebtedness on debtor countries like Germany, Australia and South America.

Nor was that all. The U.S.A. which had entered the charmed circle of creditor countries and rediscovered South America as a market for investment, " as if Cortez and Pizarro never lived," and advanced loans to Germany to enable the latter to meet her debt obligations and re-build her reserves, ceased lending to those countries as soon as prices fell. Great Britain, too, checked its stream of investment from flowing into the Dominions. The abandonment of the gold standard in one country after another, *e.g.*, in Australia and Argentina, consequent on the financial crisis, further increased the reluctance of the creditor countries to lend to the debtor countries.

This fall in international lending coupled with a drastic drop in wholesale prices intensified the

severity of the crisis and produced an era that was sombre, dark and clotted with tears.

Tata's Tribulations

Although the relapse into the throes of depression did not occur until after the Wall Street crash in 1929, the Tata Company's troubles started earlier. The disastrous labour strike of 1928 resulted in a fall in production from 428,654 tons in 1927-28 to 275,841 tons in 1928-29, and made it impossible for the Company to set aside Rs. 78 lacs as depreciation contemplated by the Tariff Board. The total laid apart in three years on this account fell Rs. 66 lacs short of the Board's figure, which shortage prevented the Company from carrying out the contemplated additions to the Plant.

Additional Protection for Galvanised Sheets.

A continuous fall in the price of galvanised sheets and the growth of Continental competition, which had been practically non-existent in 1926, aggravated the Company's troubles. The position was so serious that in its Letter No. G1271/30, dated 16/17th September, 1930, the Tata Company informed the Tariff Board as under :—

> " Any further fall in prices or any appreciable increase in costs, such as may be unavoidable if our total market for steel decreases any further, will make the manufacture of galvanised sheet in India definitely unprofitable and the Steel Company might find itself compelled to abandon, at any rate for a time, the manufacture of galvanised sheet."

The Tariff Board launched another enquiry and found that the systematic price-cutting policy adopted by Continental manufacturers, the loss of the Japanese market in sheet iron consequent on the establishment of this industry in Japan, and a diminution in the demand from the Dominions brought about by the crisis which had greatly reduced the volume of money in the hands of the buyer, had forced the British producer to lower his prices, and as the difference between the fair selling price of Indian sheet and the landed price of imported sheet was found to have increased from Rs. 30 in 1926 to Rs. 67 in 1930, the Board recommended that additional assistance to this extent be granted, which recommendation was carried into effect by an administrative order in December, 1930.

Assistance for Rails

To add to the Company's troubles, the orders for rails as against the figure of 195,000 tons per year contemplated by the Board in 1926, had only been as follows :—

	Tons.
1927-28	... 183,267
1928-29	... 131,203
1929-30	... 120,679
1930-31	... 88,496

(See letter No. G 1092/30, dated the 12/14th August, 1930, from the Tata Iron and Steel Company, Ltd., Bombay, to the Hon'ble Member for Commerce and Railways, Government of India, Simla.)

The orders for the next three years of the period of protection were estimated by the Tariff Board, in

its 1931 Report, to average only 90,000 tons a year. This reduction in the output of rails would have necessarily entailed an increase in the incidence of overhead charges, since the latter would have to be spread over a smaller tonnage. The incidence of works costs, too, would have risen, since the charges for supervision, office establishment, etc., were bound to display considerable inelasticity.

Not only that. Since the existing lay-out of the plant was such that the deficiency in the production of rails could not be made good by an expansion in the output of other forms of finished steel, the production of steel ingots, too, would have fallen. In consequence of this fall, the cost of ingots would have risen, reacting adversely not only on the cost of rails, but also on that of all finished steel.

The Board did not make good the relatively small losses which the Steel Company had already suffered on account of the fall in the orders for rails. Nor did it allow in full for the relatively big losses the Company was expected to suffer in the next three years. It took the rail orders at 113,000 tons per annum, which figure represented the probable average for the whole period of seven years and was 82,000 tons lower than the figure of 195,000 tons, contemplated by the Board in 1926, and assuming the total output of steel at (500,000 minus 82,000 tons on account of shortage in rail orders) 418,000 tons per annum, and allowing Rs. 8 and Rs. 12 on account of increase in the incidence of works costs and overhead charges respectively, which, according to the Board, could properly be allocated to rails, the Board recommended a grant of Rs. 20 per ton over the price fixed in the Company's con-

tract with the Railway Board, and an additional Rs. 7 per ton for 115 lbs. rails.

Two more years were torn from the Calendar. The darkness that had enveloped the world so long grew so black that it almost seemed that fire would break from the heart of it, though how and when none could tell. But help was still essential if industries such as the Indian iron and steel industry were to survive and reach the goal of independence. In September, 1933, the Tata Company submitted another representation to the Tariff Board, which together with the latter's recommendations will be discussed in the next chapter.

(For a brief and useful summary of the old regimes of Protection, the reader is referred to the sections on the Indian iron and steel industry in Mr. H. L. Dey's "The Indian Tariff Problem in Relation to Industry and Taxation," though the author does not share the opinions of Mr. Dey.)

CHAPTER IV

The New Regime of Protection

The last chapter traced the chequered career of the Indian Steel industry during the first wave of post-War depression, the brief season of illusive prosperity that succeeded it, and during the currency, credit and trade crises that followed on the Wall Street crash of 1929.

As this chapter opens, a new era dawns, an era in which the world is on the bridge of transition from depression to prosperity; it is an era at once of hopes and fears.

The steel manufacturers both in England and on the Continent were still faced with a difficult situation. Whilst their productive capacity had expanded, competition on the export markets had considerably increased. To worsen the situation, Russia and Japan had undertaken the construction of large iron and steel works, so that much of their demand for iron and steel products was banked up to be met by their own works when completed. As a consequence, the British and the Continental steel manufacturers were constrained in the interests of self-preservation to resort to dumping and price-discrimination.

The following statement issued by the British Iron and Steel Federation on the 18th July, 1934, will furnish concrete evidence of the measure of price-discrimination practised by the Continental countries in June, 1934 :—

Continental Iron and Steel Prices (per ton), June, 1934

	Export prices f. o. b.	Home Prices (Gold) f. o. t					
	Gold.	Germany		France		Belgium	
	£. s. d.	£. s. d.		£. s. d.		£. s. d.	
Foundry Pig Iron ...	1 12 0	3 9 0		1 14 0		1 16 0	
Billets ...	2 7 0	4 16 6		3 9 6		2 10 0	
Sheet Bars ...	2 8 0	5 1 0		3 12 6		2 13 6	
Merchant Bars	3 5 0	5 7 0		4 10 6		3 3 0	
Joists ...	3 0 0	5 4 6		4 8 6		3 3 0	
Heavy Plates ...	4 2 6	6 7 0		5 13 0		4 0 0	

The above table shows that Germany indulged both in intensive and in extensive dumping, the export price for sheet bars, foundry pig iron and billets being actually less than half the home price. France, too, was wedded to the principle of price-discrimination, foundry pig iron being the solitary instance in which the disparity between the export and the home price was practically negligible. Belgium was the only country, which practised dumping on a reasonably small scale. But, then, the Belgian prices were so low that she could compete with rivals even without resorting to dumping on any large scale. In fact, in the case of merchant bars and heavy plates she

could even afford to indulge the luxury of "reverse" dumping.

The following figures from the Iron and Coal Trades Review, August, 31, 1934, will indicate the degree of dumping indulged by the British producers of steel :—

British Iron and Steel Prices (per ton), August, 1934

	Export prices in £. s. d.	Home prices in £. s. d.
Plates, Ship, etc....	7 15 0	8 15 0 to 8 17 6
Plates, Boiler ..	8 5 0	8 0 0 to 8 10 0
Joists & Sections	7 7 6	8 15 0 roughly
Galvanised sheets 24 in. (corr.) ...	11 5 0	13 0 0 ...
Heavy rails .	7 15 0 to 8 15 0	8 5 0 to 8 10 0
Hoops ...	8 5 0 to 8 10 0	9 7 0 ...

It will be seen from these figures that price discrimination was most marked in the case of galvanised sheets, 24 in. (corrugated), joists and sections, hoops, and ship-plates.

The Indian Steel Industry.

In the face of this price-cutting and dumping, practised by the leading industrial countries in the West, it could not be expected that the Indian Steel industry, which had just emerged from the cradle, would be able to face world competition without protection. So it applied for the continuance of protection in the September of 1933 opening its Representation, addressed to the Tariff Board, in a spirit of retrospect. The six factors that had falsified the Tariff Board's anticipations made in 1926, according to the Tata

Company, had been the strike of 1928-29 ; a contraction in the demand for steel products; a drop in prices; a fall in the proportion of the higher-priced tested to lower-priced untested steel, consequent on the diminution in the demand for tested steel for engineering and other purposes; a falling off in the railway orders for rails; and the erroneous method adopted by the Board in calculating landing charges. Allowing for the fall in the price of coal, spelter and stores, a statement of profit and loss, based on the Tata Company's estimates, may be drawn up as follows :—

	Losses		Gains
	Rs. lacs.		Rs. lacs.
1. Fall in prices	73	Fall in price of coal	200
2. Loss on tested steel	33		
3. Additional freight	23	Fall in price of spelter	16
4. Loss of railway orders	160	Fall in price of stores	45
Total	289		261
5. The Strike	220		
6. Difference in landing charges, etc.	45	Balance loss	293
	554		554

After a careful scrutiny of the above statement, the Board called into question the validity of the Company's assertion " the aggregate loss due to the fall of prices is Rs. 73 lacs " and argued that the same fall in prices—which was at once the cause and the effect of depression—should have brought about an automatic reduction in the cost of production as well.

Although the Board did not seem to intend to diminish the credit due to the Company for achieving economies in the face of the crisis, nevertheless, it does not seem to have taken full cognisance of the fact that even in the face of a falling demand, overhead expenses, fixed interest charges, contract and to a smaller extent ordinary wages, and the supply of machinery, though not the replacement fund, display considerable inelasticity.

In addition to these non-plastic physical factors, a strand of benevolence of varying strength that makes us averse to inflicting misery on the poor, and that robust streak of Micawberism in the psychology of most men, ever telling them that something is bound to turn up soon, operate in union and lengthen the period of disequilibrium between costs and prices by generating reluctance in the mind of the producer to curtail the supplies of labour and capital.

Nor was the second contention of the Board that the loss of Rs. 220 lacs inflicted by the strike of 1928-29 on the Tata Company was not "directly relevant to a study of the working of a scheme of protection" legitimate; for the Company's efforts to give effect to the Board's recommendation that it should reduce its number of employees and thereby bring down its level of costs had been one of the causes of the strike.

The six factors referred to before, however, do not fill the entire canvas. The report of 1926 had estimated that the surplus over the six years, inclusive of the surplus on pig iron, would amount to Rs. 1,220 lacs, whereas the actual realisations

amounted to Rs. 749 lacs, leaving a deficit of Rs. 471 lacs, of which Rs. 293 lacs have been explained by the foregoing profit and loss statement. The remainder is still to be accounted for. According to the Steel Company, it was due to the sales policy forced on it by circumstances, such as the need for exploiting new markets and encouraging subsidiary industries to use Tata steel—circumstances that had constrained the Company to bring down its prices.

The Tariff Board, however, attributed a part of the difference between the estimated and the actual prices to what it regarded as errors of judgment in the sales policy of the Company. The marketing difficulties that always face an industrial concern during the days of depression seem to have been under-estimated by the Board. For when trade is bad, confidence is lacking and pessimism is in the air, demand loses all elasticity. No matter how low the prices may drop, the impression made on demand may still remain insignificant. Nor is it always possible to raise prices and thereby re-generate confidence. The high priests of finance may purchase securities, thereby increasing the purchasing power in the hands of consumers; they may also pump money into consumers by granting them loans or credit to effect purchases, but they can never be sure that they will be able to accelerate the velocity of circulation of money, or even arrest its tendency to retard, which is rather pronounced in times of depression. Thus before the Wall Street crash of 1929, when demand was brisk, though prices were sagging, Governor Strong tried to raise prices by the

purchase of securities. But during that period of "slump-like boom," money would never come into relation with commodities; it would merely push up the prices of securities, whereupon Strong would sell back the securities he had purchased.

It is thus obvious that price-reductions and the enlargement of the Tata Company's provision for the granting of discounts for cash payments, of commissions to agents in certain regions, of rebates to dealers who handle the Company's products exclusively—were not errors of judgment, but measures forced by the trade, currency and credit crisis, when demand had lost most of its normal elasticity.

Tatas and Re-rolling Mills.

The Board seems to have displayed a little too much solicitude for the welfare of the re-rolling industry when it wrote:

> "The (Tata) Company has claimed protection of semi-finished products in order to prevent the competition of these re-rolling mills, using foreign steel, on the ground that this competition will reduce the output of the basic industry. We see no valid ground for this fear, but on the contrary consider that the Company as the sole representative of a protected parent industry has underestimated its responsibility to the smaller industry in the matter of the supply of raw material."

The Fiscal Commission of 1921-22 had definitely laid down that an industry must be using

indigenous raw material before it could be deemed suitable for protection. But the Tariff Board preferred to leave gaps in its scheme of protection in order to ensure the free entry of billets from abroad, although it knew " a surplus production of billets sufficient for the present needs of the re-rolling industry " would be available in India. It seems to have ignored the continuity of operations that characterises the steel industry. Coal is the raw material for coke; coke, iron and lime-stone for pig iron; pig iron for steel; steel ingots for blooms, billets and slabs; and the latter for rails, structurals, sheets and plates. If one of these operations is left unprotected, a part of the scheme collapses.

Nor had Tatas underestimated their responsibility to the smaller industry in the matter of supply of raw material. The Tariff Board assumed a price of Rs. 64 per ton of billets supplied by Tatas to the Indian Steel and Wire Products Company, which was also the duty-free landed price of imported billets, although, if the price had been fixed with reference to that of foreign billets, the price to the Indian Steel and Wire Products would have been higher by the amount of freight from Calcutta to Tatanagar. The Tata Company, however, in its letter No. G 402/32, dated 4th April, 1932, addressed to the Indian Steel and Wire Products, had already written as follows :—

> " Our Board.....recognise.....that in the early stages of operation of your mill, your conversion costs will be higher than normal and in response to (your) request.....they are prepared to supply billets at Rs. 60 per ton delivered to your

Works for a period of two years commencing on 1st January, 1934 or on the date on which you first take delivery, if that date is earlier."

Thereafter, the billets were to be supplied at the price at which Continental billets could be delivered at Tatanagar subject to a minimum of Rs. 70 per ton.

Nor could the Tinplate Company complain that the terms on which tinbar was being supplied to it, were too exacting. As was stated in the last chapter, the Tariff Board admitted that the Steel Company's old agreement to sell its tinbar to the Tinplate Company of India at a price which was not to be affected by the imposition of duties, was definitely disadvantageous to the Steel Company. The new agreement, which came into force in January, 1927, was, as both Companies would admit, mutually beneficial. It provided that the Tata Company would supply a maximum of 60,000 tons of tinbar per annum at a price—

(*a*) of Rs. 83 a ton up to December, 1936; and

(*b*) thereafter (or from 1st April, 1934, if the protective duty of Rs. 48 a ton was then reduced) at 33 per cent. of the average f.o.b. South Wales export price of tinplates.

In estimating the "fair selling price" of Indian steel, the Tariff Board took into account the following three component elements :—

(*a*) Works costs;

(*b*) Overhead charges; and

(*c*) Manufacturer's profit.

Works Costs.

The following comparative table gives the rates per ton of output actually charged to the funds set aside for the periodic rebuilding of the ovens and furnaces, rates proposed by the Company, and those adopted by the Board :—

	Rate per ton of output charged at present.	Rate proposed by the Company.	Rate adopted by the Board.
	As.	As.	As.
Coke Ovens ...	2	1	1
Blast Furnaces ...	12	8	8
	Rs.	Rs.	Rs.
Open Hearth ...	5·5	5·5	2·0
Duplex Plant ...	2·5	2·0	2·0
Ingot Moulds and Stools	1·2	0·7	0·5

The Tariff Board allowed for lower charges for maintaining rolls; for increased credit to mills at the rate of Re. 1 per ton of saleable steel for scrap sold at a price considerably higher than its value for re-melting; it allowed for second class rails, which the Company had excluded from consideration in its determination of costs; it allowed for the contraction of the railway orders for rails from the figure of 195,000 tons a year, estimated in 1926, to an average of less than 50,000 tons since 1930-31, which involved a corresponding reduction in the orders for fishplates ; it allowed for the fall in the prices of coal and spelter from the estimated figures of Rs. 8 and Rs. 555 a ton to Rs. 5-12 and Rs. 235 a ton respectively ; it allowed for the effects of improved yields in the rolling mills, of the installation and operation of the new coke ovens, the new open hearth furnaces, a new rolling mill, the blast furnace gas cleaning plant and the

new sheet mill units. And having made these adjustments, it arrived at the following estimates of costs for 1940-41, which together with the adjusted costs as then ascertained and the average costs for the next seven years, are set out in a tabular form below :—

Works Costs per Ton

	Adjusted costs (1934).	Estimated 1940-41.	Average for the period of seven years.
Rails ...	56·00	44·23	50·11
Fishplates ...	86·52	69·00	77·76
Structural sections ...	60·00	48·23	54·11
Bars ...	59·63	49·00	54·31
Plates ...	62·57	50·58	56·57
Tinbar and Billets ...	44·86	35·56	40·21
Black sheets ...	85·54	65·12	75·33
Galvanised sheets ...	115·54	95·12	105·33
Sleepers ...	55·86	46·06	50·96

Allowing for the recent increase in the Bengal Nagpur Railway Company's freight charges, the Board estimated the increase in costs consequent on higher railway charges, and the 1940-41 costs and the average costs, both inclusive of the increased railway charges, at the following figures :—

Works Costs per Ton

	Increase in costs due to higher railway charges.	Estimated costs 1940-41 including increased railway charges.	Average costs including increased railway charges (1940-41).
	Rs.	Rs.	Rs.
Rails ...	3·0	47·23	53·11
Fishplates ...	3·5	72·50	81·26
Structural sections ...	3·0	51·23	57·11
Bars ...	3·0	52·00	57·31
Plates ...	3·5	54·08	60·07
Tinbar and Billets ...	2·5	38·06	42·71
Black sheets ...	3·5	68·62	78·83
Galvanised sheets ...	3·5	98·62	108·83
Sleepers ...	3·0	49·06	53·96

Estimated Overhead Charges.

The overhead charges, as mentioned in the last chapter, consist of—

(*a*) depreciation ;
(*b*) interest on working capital ;
(*c*) Managing Agents' commission and Head Office charges.

(*a*) Depreciation :—

The Tariff Board assessed the replacement value of the Steel Company's fixed assets at Rs. 12½ crores, distributed as follows :—

	Rs. (Crores)
Ore Mines ...	·50
Town ...	1·49
Works ...	10·51
	12·50

Depreciation at 6¼ per cent. on Rs. 12½ crores amounted to Rs. 78 lacs per annum.

(*b*) Interest on working capital :—

The Board accepted the Company's figure of Rs. 11 lacs, as interest on working capital, which was 6 per cent. on the Company's calculation of six months' Works costs.

(*c*) Managing Agents' commission and Head Office charges :—

The Board retained the figure of Rs. 10 lacs a year on these items.

Manufacturer's Profit.

For the same reasons as in the past, the Board allowed an average profit of 8 per cent. on the value of the fixed assets. The total profit to be earned at this rate on Rs. 12½ crores amounted to Rs. 100 lacs a year.

The Board's estimate of charges above Works Costs

	Rs. (Lacs).
I. Overhead:	
Depreciation ...	78·00
Interest on Working Capital ...	11·00
Managing Agents' Commission and Head Office Charges ...	10·00
	99·00
II. Manufacturer's Profit ...	100·00
Total ...	199·00

Assuming an average output of 555,000 tons, the average incidence of overhead charges and profit, as estimated by the Board, worked out to Rs. 35·8 per ton of steel.

The following table gives the Board's estimates of average Works costs, average output, overhead and profit and fair selling price f. o. r. Tatanagar :—

	Estimated average Works Costs. Rs.	Estimated average output. Tons.	Overhead & profit. Rs,	Fair selling price f. o.r. Tatanagar. Rs.
Rails ...	53	80,000	42	95
Fishplates ...	81	3,000	52	133
Structurals ...	57	117,000	43	100
Bars ...	57	80,000	37	94
Plates ...	60	35,000	39	99
Semis ...	43	110,000	10	53
Black sheets ...	79	25,000	43	122
Galvanised sheets	109	90,000	50	159
Sleepers ...	54	15,000	24	78

Adjustments in the fair selling prices f. o. r. Tatanagar.

The adjustments made in the fair selling prices f. o. r. Tatanagar fall under three heads :—

(*a*) Freight disadvantage ;
(*b*) Selling expenses ; and
(*c*) Miscellaneous adjustments.

Freight disadvantage :

The excess of the freight paid on steel shipped from Tatanagar to a certain area over that borne by imported steel shipped from the nearest port to the same area, may be said to be the measure of freight disadvantage suffered by the Steel Company. During the days of depression, the Steel Company was, like the sailor in Juvenal—

"digitis a morte remotus,
Quator and septem "

which may be translated as follows :—

" Removed from death by four or seven fingers' breadth."

The instinct for self-preservation had compelled the Company to exploit new markets and push its sales into freight-disadvantage areas. It was necessary to make an allowance for freight advantage or disadvantage before Indian and import prices could be reduced to a comparable basis and a satisfactory scheme of protection evolved.

The actual freight disadvantage (or advantage+), the allowance claimed by the Company and

that recommended by the Tariff Board, in respect of each product on the basis of freights then in existence, are given below :—

(*i*) *Rails, Fishplates and Sleepers*

	Actual disadvantage: average of 6 years.	Allowance claimed by the Company.	Allowance recommended by the Board.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Rails ...	7	8	7
Fishplates ...	7	8	7
Sleepers ...	10	10	8

(*ii*) *Other Classes of Steel*

	Actual disadvantage (or advantage +) 1932-33.	Allowance claimed by the Company.	Allowance recommended by the Board.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Structurals:			
(I) Tested ...	4·2	5	5
(II) Untested ...	0·7	3	1·5
Bars:			
(I) Tested ...	5·1	5	5
(II) Untested ...	5	6	5
Plates:			
(I) Tested ...	5·5	5	5
(II) Untested ...	3·6	5	4
Semis ...	...	12	5
Black sheets:			
(I) Tested ...	...	5	1
(II) Untested	+4·2	2	...
Galvanised sheets	+1·5	5	2

The Board pared down the Company's figures in certain instances in the belief that with the

revival of demand, the Company would be able to sell a substantial portion of its output in freight-advantage areas. But it does not seem to have attached due weight to the factor of time. The effect of immersion in the waves of a world crisis could not be expected to wear off soon. A rise in demand and a diminution in the inelasticity of markets could only be a slow process. Besides, when the tide did turn and prosperity dawned, it could only be expected that sooner or later a rival steel plant would come into being, and perhaps force Tatas to increase their sales in freight-disadvantage areas.

Adjustment for Selling expenses.

(2) The Tariff Board allowed a uniform rate of two and a half per cent. on the fair selling price *ex*-works to cover all selling expenses, such as cash discount, merchants' commisssion, and miscellaneous claims, *e.g.*, loss due to delayed delivery or errors in loading or due to damage in transit. The allowance at this rate worked out to Rs. 10 lacs a year.

Adjustment for Lag between Import and Realised Prices.

(3) The third adjustment claimed by the Company was in the nature of an allowance for lag between import and realised prices. The following table will show the actual lag in 1932-33, the amount claimed by the Company and that proposed by the Board on that account :—

	Actuals 1932-33.	Company's Claim.	Allowance Proposed.
	Rs. per ton.	Rs. per ton.	Rs. per ton.
Structurals:			
(I) Tested ...	6·9	4	2
(II) Untested ...	2·8	4	2

	Actuals 1932-33. Rs. per ton.	Company's Claim. Rs. per ton.	Allowance Proposed. Rs. per ton.
Bars:			
(I) Tested ...	4·1	6	3
(II) Untested ...	6·9	6	3
Plates:			
(I) Tested ...	6·5	6	3
(II) Untested ...	5·9	6	3
Black sheets:			
(I) Tested ...	...	6	3
(II) Untested ...	7·7	6	3
Galvanised sheets ...	18	8	4

Here, too, the Board made allowances definitely lower than those warranted by the conditions then in existence.

Tested and Untested Steel.

In its report on the Statutory Enquiry of 1926, the Tariff Board had written as follows :—

"There is a difference in the quality of the two classes of steel (tested and untested) and we regard it as of importance that there should be a difference in price in India corresponding to this difference in quality. We have received evidence that steel made to British Standard Specification on the Continent can be purchased at ten shillings, or about Rs. 7 (per ton) more than the price of non-standard Continental material."

In its Report of 1934, the Board again discussed the question of the difference between the prices of tested and untested steel, admitted that the actual difference had been considerably in excess of the figure assumed by the Board in 1926,

asserted that "in the conditions of the Indian market the price of tested steel is determined by British prices and that of untested steel by Continental prices," and then concluded—it is not known how—that there was no need to preserve any difference between the prices of tested and untested steel.

The demand side of the picture seems to have been ignored. Indeed both tested and untested steel are produced by the same process. But supply, to use Marshall's phrase, is only one blade of the scissors, of which the other blade is demand. Both blades must be brought into operation before any cutting can be effected. The Consumer's preferences must be taken into account, supply, demand and price being mutual determinants. But the Board side-stepped this phenomenon of mutual causation, and swept away the wide difference that existed between the British and Continental steel prices. Thus, it recommended a duty of Rs. 10 on British bars, which had been selling for Rs. 96 a ton, and of Rs. 39 on Continental bars, which had been selling for Rs. 67 a ton, thereby bringing up the prices of both British and Continental bars to Rs. 106 a ton. Similarly, by recommending a duty of Rs. 10 and Rs. 40 a ton on British and Continental galvanised sheets respectively, the prices of which had been Rs. 160 and Rs. 130 a ton, the prices of both kinds of galvanised sheets were brought up to Rs. 170 a ton. In other cases a difference was maintained between tested and untested quality, but it was by no means adequate.

It would have been too much to expect untested steel to sell at the same price as tested. The

only alternative left to the Steel Company was to concentrate exclusively on the manufacture of tested steel; but such concentration would have been a commercial impossibility, as it would have involved the scrapping of " heats " that did not pass the test, entailed inspection charges, the metallurgical inspector's fees, etc., and thus raised the cost of steel-making by about Rs. 10 per ton.

Another error which the Board committed was to identify British steel with tested steel and Continental steel with untested, and this despite the assurance of the National Federation of Iron and Steel Manufacturers, Great Britain, conveyed in its Supplementary Memorandum, dated the 12th December, 1933, that it would be able and willing to meet the Indian demand for tested as well as untested steel. There could have been little doubt that as a result of this identification, the duty-free British steel would be placed at a definite advantage and the object of protection undermined.

Nor would have Tatas alone suffered from the measure proposed by the Board. Even the re-rolling mills, which concentrated mainly on the manufacture of untested steel, and for whose welfare the Board had displayed such solicitude, would have found it impossible to realise a fair-selling price for their steel.

The Board even went further and recommended the removal of revenue duties on structurals, plates, and billets of British origin—a recommendation which could hardly be considered sagacious at a time when budgetary difficulties stared in the face.

The argument employed by the Board in para. 114 of its Report that since most of these products were used in public utility works, any increase in the duties on them would impose an undesirable burden on the public, was hardly applicable. For products which are more exclusively used in public utility works, such as rails and sleepers, were not proposed to be exempted from the revenue duty, whilst plates, structurals and billets were. Further, the continuance of revenue duties on these products would not have created an additional burden on the public, since whatever extra the public paid in price, would have been got back in the shape of extra revenue.

Railways and Tatas.

In a footnote on page 70 of its Report, the Tariff Board admitted that the revision of freight rates on the Tata Company's traffic over the Bengal-Nagpur Railway would involve an additional expenditure to the Company of Rs. 27 lacs a year on the basis of traffic carried in April-November, 1933, and the substitution of the ordinary second class rate for the special rate then charged by the East Indian Railway on the Company's traffic another 12 (to 16) lacs a year, but it made allowance only for the former and not for the latter increase.

Proposed Specific Duties.

In the opinion of the Board, the following articles, apart from rails and fish-plates, required no protective duties :—

(1) Structurals (tested) of British manufacture;

(2) Plates (tested) of British manufacture;

(3) Semi-finished steel; and
(4) Steel sleepers.

On the other kinds of steel, the following scales of duties were recommended :—

	Rs. per ton.
Structural sections (untested) not of British manufacture ...	43
Bars (tested) of British manufacture ...	10
Bars (untested) not of British manufacture	39
Plates (untested) not of British manufacture	25
Black sheets (tested) of British manufacture	11
Black sheets (untested) not of British manufacture ...	32
Galvanised sheets of British manufacture	10
Galvanised sheets not of British manufacture ...	40

Provision for Off-setting Duties.

The scheme of protection proposed by the Board was to continue in force until the 31st March, 1941, but it contained a provision that should the market conditions alter, the Governor-General-in-Council could effect a variation in the scales of the above duties " without a previous enquiry by the Tariff Board and without recourse to legislation."

Such provision for off-setting duties was calculated to protect the Indian Steel industry against the effects of possible falls in the prices of British or Continental steel. But in practice, off-setting duties are seldom efficacious as engines of protection, for the machinery set up by the Government to take care of all price-variations is invariably dilatory in action. Thus during the last period of protection, although import prices had fallen considerably, the power conferred on the Governor-General-in-Council by the Steel Industry (Protection) Act, to impose

additional duties in such cases, was never exercised except in the solitary instance of galvanised sheets, so that the provision for off-setting duties was not of much practical value. If a margin against unforeseen circumstances was necessary, it should have been provided in the shape of higher protective duties.

Excise Duties.

In paragraph 120 of its Report, the Tariff Board suggested the possibility of excise duties as an alternative source of revenue, with a corresponding increase in the protective duty " so as not to impair the measure of protection granted to the industry."

Administratively, an excise duty is neither difficult nor expensive to collect, and, if imposed on large and concentrated industries, satisfies in general the canon laid down by Adam Smith that " every tax ought to be so contrived as to take out and keep out of the pockets of the people as little as possible over and above what it brings to the public treasury of the State." But unless fully countervailed, excise duties nullify protection. And in practice, off-setting duties that are just adequate are difficult to devise, since full account has to be taken of the relative elasticities of the home supply and demand, and of foreign supply of the material in question in specific relation to the existing level of supply, demand and prices, elasticity being variable as those levels vary.

Further, no machinery for off-setting duties, however well-designed, can be so prompt and automatic in operation as to furnish an optimum safeguard against all possible changes of import prices, especially in this age of abrupt changefulness.

If considerations of revenue demanded the imposition of excise, it is difficult to understand why the Board should have recommended the removal of revenue duties on plates and structurals of British manufacture. Unless otherwise counteracted, there was little justification for a measure that was bound to press a heavier burden on the back of an industry whose increased efficiency had enabled it to contribute an additional sum of more than Rs. 40 lacs a year in the shape of freights to the Railway revenue of the Government, and which employed nearly 45,000 men, sold directly or indirectly material to the value of five to six crores of rupees, and assisted a number of associated industries in a rich variety of ways.

The Press.

The recommendations of the Board were assailed with a cascade of hostile criticism from the Press. Discussions followed first in the Select Committee of the Legislative Assembly and then on the floor of the Assembly itself, but no alterations were made in the main texture of the Board's recommendations, except that the Government preferred equalising duties to the removal of revenue duties on imports. The Iron and Steel Bill, which came into force on the 1st November, 1934, gave effect to these recommendations, and levied an excise duty of Rs. 4 per ton on steel ingots and countervailing duties on imports.

The March of Time.

The years that followed falsified the assumptions both of the Steel Company and the Tariff Board, the various allowances claimed by the former and those conceded by the Board falling short of those warranted by

the later course of events. Nevertheless, Tatas' tribulations were not so great. The first year of protection which closed on the 31st March, 1935, was a year which had one foot in the old regime and the other in the new, so that the Indian steel industry was able to lean back for the first seven months on the higher rate of protection under the old regime, though a little disturbed by an increase of imports of protected iron and steel from about 1,87,000 tons in 1933-34 to about 2,20,000 tons in 1934-35 (Indian Finance Year Book, 1935). It was also a year which saw an increase in the world's output of steel and a relative stability of world prices. Tatas made a net profit of Rs. 1,76,64,199-13-8 out of which they distributed nearly Rs. 1,60,60,000 as dividend at the rate of Rs. 9 per share on First Preference and Rs. 22-8 per share on Second Preference, setting apart a sum of Rs. 12,00,000 for distribution as bonus among their employees.

Each year that followed brought in increased prosperity to Tatas, as will be seen from the following comparative statement of production of steel :—

Production of Finished Steel Materials

	1933-34 Tons.	1934-35 Tons.	1935-36 Tons.	1936-37 Tons.	1937-38 Tons.
Coke ...	709,000	726,000	730,000	778,000	896,000
Pig iron ...	842,000	892,000	900,000	827,000	921,000
Steel ingots ...	721,000	834,000	880,000	850,000	899,000
Saleable steel ...	531,000	604,000	646,000	667,000	660,000

Sales :

The following comparative table showing the quantities of steel despatched to customers will

give an idea of the progressive increase in the Company's despatches during the period under reference :—

	1933-34 Tons	1934-35 Tons	1935-36 Tons	1936-37 Tons	1937-38 Tons
Rails and fishplates ...	40,000	76,000	82,000	88,000	88,000
Bars and light structurals	1,55,000	1,75,000	1,85,000	1,82,000	1,86,000
Heavy structurals ...	88,000	88,000	97,000	82,000	79,000
Plates ...	48,000	39,000	46,000	49,000	66,000
Black sheets ...	17,000	21,000	29,000	28,000	31,000
Galvanised sheets ...	60,000	73,000	77,000	90,000	69,000
Tinbars ...	61,000	75,000	71,000	70,000	82,000
Sleeper bars and sleepers	5,000	22,000	19,000	23,000	12,000
Blooms, billets and sheet bars ...	65,000	44,000	45,000	60,000	54,000
Total ...	5,39,000	6,13,000	6,51,000	6,72,000	6,67,000

The gross profit of the Steel Company in 1935-36 was not so high as in 1934-35, since the general level of c.i.f. prices of imported steel during 1935-36 was lower than in 1934-35; Rs. 35 lacs had to be paid to the Government of India in the shape of excise duty, which was about 20½ lacs in excess of the figure for the preceding year; and higher freights incurred especially in the regions served by the East Indian Railway. The figure for net profit in 1935-36 was Rs. 1,58,02,495-9-0 out of which the Company's directors set aside a sum of Rs. 1,50,97,405-8-0 for distribution among its shareholders, paying dividend for the first time since 1921 on all classes of shares—First Preference, Second Preference, Ordinary and Deferred.

In 1936-37, when the world output and consumption of steel stood at an unusually high level, the Company's net profit was higher than in 1935-36,

standing at Rs. 1,83,56,464-13-9, out of which a sum of Rs. 20,00,000 was set apart for distribution as bonus amongst its employees and the rest chiefly for the payment of dividend amongst the various classes of shareholders. This improvement was made possible by the increase in the output of saleable steel and by the rise in the selling prices of the Company's products, which more than counteracted such unfavourable factors as the increase in the average price of coal in 1936-37 and a drop in the total output of pig iron due to the exigencies of the programme for the re-lining of blast furnaces (Annual Report of the Tata Iron and Steel Company, 1936-37).

For a long time, the Tata Company had been considering taking up the manufacture of tubes, hoops and strip and adding to the production of sheets and medium sections. Thinking that such a development might advantageously be achieved in union with other interests in the Indian industry, it started negotiations in 1937 with the Indian Iron and Steel Company, the Bengal Iron Company and Messrs. Bird and Company. But as it was not possible to arrive at a mutually satisfactory arrangement, the negotiations were dropped towards the end of the year, the Indian Iron and Steel Company undertaking the construction of a steel works through the medium of a new Company and Tatas ordering independently the equipment required for the development referred to above.

The year ending 31st March, 1938, was the most successful year in the history of Indian steel. During the greater part of the year, the world prices

of steel were at a higher level than in the previous years and the Steel Company, well-equipped for large outputs at reasonably low costs, benefited by this rise in price, so that although in consequence of a serious set-back in the demand for galvanised sheets in the latter half of the year under review, there was a slight decline in the output of steel—from 672,000 tons in 1936-37 to 667,000 tons in 1937-38—the net profits of the Company amounted to Rs. 2,83,46,064-12-0, which constitutes a record. Out of this sum and the balance carried forward from last year's account, Rs. 2,38,84,697-3-0 was set aside for distribution as dividend to all classes of shares; and Rs. 41,56,725-11-5 as bonus to employees, under the Company's Profit-Sharing Scheme, the details of which are set out in Appendix B.

Conclusion :

Considering the recent progress of the Indian Steel industry, it seems the chapter of protection will soon come to a close and the industry will be able to face world competition unprotected before long. But as the age we live in is an age not of stability, but of hysterical disintegration and cumulative uncertainties, an age shifting and changeful, with most of the familiar landmarks obliterated, this conclusion can only be in the nature of an essay in speculation.

About the middle of 1937, when it seemed that the dawn had burst and the world had lifted itself out of the trough of depression, Colin Clark pronounced the following weighty conclusion in an article entitled " National Income at its Climax," which appeared in the *Economic Journal* in June, 1937 :—

> These prognostications so far have brought us to the brink—for it is after the end of 1937 that investment will begin to decline, inspite of armament orders, and will after a short interval begin to drag consumption down with it. We are approaching the period which Mr. Harrod describes as the breathing space, which continues for a little while before uncontrollable slump begins."

It is true that owing partly to general prosperity but mainly to its ability to effect improvements at a faster rate and in more directions than originally anticipated, the Indian Steel industry has been able to turn out a larger tonnage of steel and make greater profits than were estimated either by itself or by the last Tariff Board, and this, inspite of the adjustments claimed by the Steel Company and those conceded by the Board—detailed earlier on in this chapter—falling, in respect of certain items, short of those warranted by the actual circumstances that followed.

Looking to the future, the protection which the Company has so far enjoyed is due to expire in 1941, whilst the freight rebate granted by the Bengal-Nagpur Railway to the Company came to an end on the 31st March, 1939. The resultant losses to the Steel Company on these two accounts will be approximately Rs. 37 lacs and Rs. 45 lacs respectively. In addition to these factors, the Steel Company will also be faced with the competition of the Steel Corporation of Bengal which is expected to commence production

of steel very shortly. But Tatas seem to be well equipped and fully prepared to meet all these contingencies, and considering the present strong position of the industry and the fact that it can utilise what has been called the " breathing space " to conserve and strengthen its resources still further, the Indian Steel industry, may be expected to dispense with protection altogether after the expiry of the present regime in 1941, unless unforeseen factors, such as serious labour trouble or a trade crisis of an unprecedented magnitude, upset all calculations.

APPENDIX A

The City of Indian Steel

The city of Jamshedpur came into being in 1908-1909, when the Steel Company acquired 3,584 acres of land, erected the Steel Works, and built bungalows for the seperior staff and quarters for the coolies, the artisans and the clerical staff.

In 1916, when it was decided to extend the Works, it was found necessary to extend the town as well, which had been originally laid out to accommodate 8,000 to 10,000 workmen. Experts were consulted. Dr. Harold Mann, a social worker of Poona, and Mr. A. V. Thakkar of the Servants of India Society, visited Sakchi and after a careful study of its conditions, submitted a report on the different aspects of the town.

A further area of 12,215 acres was acquired by the Company, and on the advice of a committee of Social Welfare Experts, who met in London from time to time, a separate town division was created and organised into two distinct branches, the administrative and the executive.

In 1919, Lord Chelmsford, the Viceroy of India, visited the town, and in memory of Mr. Jamshedji Tata, bestowed on it the name of

Jamshedpur, the name of the Railway station being shortly afterwards changed from Kalimati to Tatanagar.

Realising that the rapid extension of the Steel Works and the proposed establishment of subsidiary companies in the neighbourhood would develop the place into a large and important industrial centre, the Government of Bihar and Orissa appointed a Committee with the approval of the Government of India, to examine the various problems associated with the future administration of the area and submit its recommendations.

The Committee presented its Report in April, 1919, recommending the creation of a new administrative agency, to be called the Jamshedpur Board of Works, which should take over all the civic work which was then being done by the Steel Company. In addition, it recommended the formation of a new district or sub-division, to be placed under the control of a Sub-Divisional Officer. It is not necessary to discuss the details of its various recommendations, as no Resolution was issued by the Government on the findings of the Committee.

In 1923, an Agreement was entered into between the Steel Company and the various Associated Companies, and a Governing Body of the town of Jamshedpur was formed, comprising (*a*) a Committee of Companies, and (*b*) a Board of Works, to hold office for a period of three years.

The duties of the Committee of Companies were :—

(1) To approve the budgets submitted by the Board of Works ;

(2) To appoint auditors and consider their reports;
(3) To give administrative approval to all projects estimated to cost over Rs. 5,000 and to accept tenders for works expected to cost over Rs. 1 lac.
(4) To sanction the creation of posts carrying a salary of over Rs. 300 per month; and
(5) To decide any questions referred to it by the Board of Works.

The Committee comprised one representative from each of the subscribing Companies, the Chairman being appointed by the Steel Company.

The Board of Works comprised six representatives of the Steel Company, three representatives of the Associated Companies, and two representatives of the public, a representative of the Steel Company being its Chairman. It derived its revenue from (*a*) rents, fees, and profits from enterprises under its control, and (*b*) assessment on the subscribing Companies; and looked after the administration of public health, sanitation, hospitals, fire protection, sewerage, water works, lighting, education, bazars, slaughter-houses, farms, communications, general welfare work, and all that is normally administered by a municipality.

But as neither the Committee of Companies nor the Board of Works possessed statutory powers, the Government issued a Notification in June, 1924, which transformed the area of Jamshedpur into a Notified Area and appointed a Committee of eleven members for the administration of the area.

In 1925, the Tinplate Company of India, Ltd., expressed its reluctance to a renewal of the Board of Works Agreement. Prolonged negotiations followed as a result of which the Board of Works was abandoned, and the administration of Jamshedpur was placed under the dual control of the Notified Area Committee and the Town Division of the Steel Company. In the meantime, the Town Division had been re-organised, and the administrative and the executive functions merged together and assigned to an official designated Chief Town Engineer and Administrator.

In July, 1926, the Government issued a Notification arming the Committee with powers of municipal taxation which it had hitherto lacked. But it does not exercise these powers in practice, as all the essential municipal services, such as water supply, sanitation, drainage and lighting, are provided by the Steel Company. It acts as a local statutory authority, passes and puts into operation bye-laws dealing with the control of markets, sanitation, traffic and roads, buildings, etc., and receives grants from the Government for the purpose of primary education and road maintenance.

In 1932, the Town Division of the Steel Company was again divided into two branches, the administrative and the engineering, and placed under the control of an officer called Chief Town Administrator, assisted by another officer called Chief Town Engineer.

Having described at some length the unique system of administration of the city of Indian Steel, we shall now turn to the housing accommodation that this city provides for its workmen.

Housing :

Realising the necessity of providing housing accommodation for its workmen, the Steel Company commenced building bungalows and quarters in 1909, laying out a programme which consisted of seven bungalows for the superior staff, about 100 quarters for the artisans and the clerical staff, and three or four blocks of one-roomed quarters for the low-paid workmen.

As the Works expanded, additional bungalows and quarters were built, but not enough to cope with the growing demand for housing accommodation. Dr. Harold Mann in his report on " Social Welfare in Jamshedpur " wrote that in July, 1918, roughly speaking, only 25 to 30 per cent. of its permanent employees had quarters provided for them by the Company, and emphasised the need for an extensive and properly planned housing programme to remedy the shortage in this direction.

In November, 1919, the newly appointed Chief Town Engineer put up a report, recommending that new *bustees* should be laid out in accordance with the hexagonal system, which had been introduced by an Austrian Town Planner, Herr Rudolf Muller. A town plan was prepared, which made provision not only for housing, but also for open spaces, a race course, and playgrounds. This report was adopted by the Board of Directors, and an extensive building programme was taken in hand, although the post-War depression in 1923 compelled the Steel Company to reduce this programme considerably.

The following statement gives the total number

of bungalows, houses and quarters constructed by the Steel Company up to the 31st March, 1938 :—

	No. (in terms of unit).
Lowest type of quarters, rent up to Rs. 5 per mensem	3,026
Medium type of quarters, rent up to Rs. 15 per mensem	2,680
Superior type of quarters, rent up to Rs. 30 per mensem	291
Bungalows, rent over Rs. 30 per mensem	287
	6,284

Another 1,600 quarters have since been completed, most of which are intended for lower-paid employees.

The Steel Company also grants leases for the construction of residential premises and encourages the building of houses by its employees, advancing loans for this purpose at 3 per cent. interest. To those who desire to erect brick and tiled houses, loans are granted on the mortgage system up to one half of the estimated cost of the building, repayable in easy instalments within a maximum period of 5 years, whilst to those wishing to construct only huts or *kutcha* houses an advance equal to four months' pay is allowed, without any bond, repayable within eighteen months of the completion of the building.

The total amount of building loans granted up to the 31st March, 1938, was Rs. 5,37,255 approximately.

Water Supply :

Situate on the *Subarnarekha* and *Khorkai* rivers, the Town obtains its water supply from a pumping

station about two and a half miles below the point where the two rivers mingle their waters. Up to 1923, all the water required either in the Works or in the Town was pumped direct into the Works, and from the upper cooling tank inside the Works, it was pumped on to slow sand filters, whence it gravitated to the Power House, being distributed from there by separate distribution systems to the Works and the Town.

The upper cooling tank and the lower cooling tank provide an ample reserve of water for the Plant to be utilised in case the rivers run dry in the hot weather.

As the Works and the Town expanded, it became imperative to extend and improve the water supply. A scheme was formulated which provided for 12 units, consisting of settling tanks, reaction tanks, and rapid mechanical gravity filters.

Two settling tanks were built side by side from which water is drawn through floating arms, treated with a solution of alumina-ferric and soda ash, then passed into reaction tanks and thence into filters, and after filtration chlorinated as a final safety measure.

In order to improve the system of distribution, a pumping station costing Rs. 1,32,000, a number of balancing reservoirs or towers and distributing mains were constructed.

All quarters carrying a rent of Rs. 15 and over a month are provided with inside water supply, the other quarters and the various *bustees* being supplied with water through rotary bailers and self-closing fountains.

A scheme for the extension of water supply to the Town and the Works from the Dimna Nulla, in the neighbouring hills, estimated to cost over Rs. 26 lacs, is now in progress.

The total capital cost of water supply up to the 31st March, 1938, was Rs. 30,34,650, the present annual recurring expenditure being Rs. 1,34,000

Lighting

All the roads in the developed areas as well as a number of *bustees* are fitted with street lights and according to the programme on hand, the entire Town will be provided with street lights in another two years or so, the capital cost on these lights up to 31st March, 1938, being Rs. 1,42,146 and the cost of maintenance for the year 1937-38, Rs. 12,500.

Electric Supply :

All quarters carrying a rent of Rs. 15 a month and over have been provided with electric lights and fans, current being supplied to employees practically at cost price and to non-employees at reasonably low rates. The Company has now decided to electrify even the lowest-rented quarters within the next three years, at an estimated cost of Rs. 13 or 14 lacs.

Sewerage and Sewage Disposal :

In the beginning, two sets of main sewers were constructed, each connected to a septic tank. The sewage was removed by hand and cast into pits connected with the sewers. With the passage of years, the need for a better system of sewage disposal began to be felt.

In 1916, Col. Clemesha was consulted. On his advice that the Steel Company should investigate the possibilities of the activated sludge process, Dr. Gilbert Fowler of the Indian Institute of

Science, Bangalore, was asked to experiment on the behaviour of sludge under Indian conditions. A chemist was engaged to study under Fowler and early in 1918, he was sent to Jamshedpur to conduct further experiments there.

As a result of detailed investigations, an Activated Sludge Plant was constructed, connected by a rising main to a Sump Well; separate septic tanks were opened in different parts of the Town, and all new bungalows and latrines were equipped with flush-system privies, and an attempt was made to connect the old houses and latrines to the flush system.

In 1926, a Simplex Surface Aeration Plant was constructed to take extra sewage; two pumping stations were built and main sewers brought into being to convey sewage to these stations. From the pumping stations, rising mains carried a portion of the sewage to be treated at the Activated Sludge Plant and the balance to the Farm lands.

In 1932, a large settling tank was constructed so that the Activated Sludge Plant and the farm lands might not be burdened with heavy solids.

As the problem of sewage disposal was becoming increasingly difficult with the growth in population, the Company engaged experts to submit recommendations in the matter. A new sewerage and sewage disposal scheme, estimated to cost over Rs. 13 lacs, has recently been approved by the Management of the Company.

The total cost of the sanitary works in the town up to 31st March, 1938, was Rs. 28,08,451 approximately, the annual maintenance cost being about Rs. 70,000.

Hospital and Medical Relief :

In the beginning, only a Camp Hospital of five beds existed in a temporary shed. Later, it was removed to a *kutcha* thatched roof. The staff consisted of one medical officer, one compounder and one Indian nurse.

In 1910, the buildings in what is known as 'G' Road near the Works Main Gate were converted into a hospital. In 1923, a new hospital was opened ; in 1928, a new block added.

In 1930, when the Chief Medical Officer died, a special X-Ray building was erected in his memory in the Hospital compound.

In addition to a Main Hospital, the Company maintains 6 Outdoor Dispensaries, 2 First-Aid Stations in the Works and 1 at Agrico, and 1 Isolation Hospital.

Treatment at the hospital is free to everybody, whether an employee or not, except that a nominal charge is made to indoor patients. Nor is any charge made to the employees or the public for the supply of medicines.

The entire cost of the Hospitals and Dispensaries is met by the Company, the capital expenditure up to 31st March, 1938, being Rs. 6,73,220, the recurring expenditure in 1937-38 approximating to Rs. 3.6 lacs.

Public Health and Sanitation :

From the beginning, the Company undertook the removal of house refuse, cleansing of drains, etc., appointing a small staff of sweepers under the Chief Medical Officer, assisted by a small number of Sanitary Inspectors, a separate Health Officer being provided in 1918. This Department

provides not only the usual conservancy services, but also most of the public health services normally provided by a Municipality, over 900 hands being engaged for this purpose. In order to improve the conservancy services of the Town, a scheme is now under contemplation which will divide the Town into four Districts, each under the supervision of a qualified Sanitary Inspector.

The Health Department not only sees to the segregation of patients in cases of infectious and contagious diseases, but also carries out free vaccination, which has been made compulsory since the extension of the Bengal Vaccination Act of 1888; inspects food, taking action under the Food and Drugs Adulteration Act wherever necessary; and maintains a malaria-prevention staff which wages continual war against malaria-carrying mosquitoes.

The annual recurring expenditure incurred by the Company on this Department in 1937-38 was Rs. 2,18,200.

Communications: Highways and Roads:

In the beginning the only safe means of transit between the Railway Station and the Works was the trolly on the Works siding. The cart track was gradually converted into a sort of road, and bullock-drawn tongas were provided by the Company for the benefit of visitors.

With the expansion of the town, roads connecting it with the Works were laid out by the Company and a few horse-drawn tongas appeared. In 1916-17, the Company purchased two buses for the conveyance of employees to and from the Station.

In 1919, the Chief Town Engineer put forth a town planning scheme, according to which all road alignments were to be based on the contours of the ground, with an eye, of course, on the efficient and quick movement of traffic between the various points of importance.

With the passage of years, Jamshedpur became interwoven with a network of roads—roads that are not mere tattered lengths of tape, but are metalled up to a width ranging from 16 to 24 feet and planned for an eventual width of 100 feet.

In 1925, as a result of the representation made by the Government, all the main thoroughfares and the roads leading to Government buildings were declared public highways vesting in the Notified Area Committee, which declaration was merely a piece of legal ritual, as, owing to the limitation of the Committee's resources, most of the cost of maintenance was and is being borne by the Steel Company.

Towards the end of 1937, there were 17 miles of public roads and 71 miles of private roads, the capital cost up to March, 1938, being Rs. 7,52,250.

Education

From the very beginning, the Steel Company has taken on itself the responsibility to provide educational facilities for all the children in Jamshedpur; one High School and four Middle Schools for boys and one High School and one Middle School for girls in addition to 9 Night Schools and 17 Primary Schools being provided by the Company.

In order to encourage education amongst the masses, no fees are charged in the Lower Primary

and Night schools, the fees in the upper classes being concessional.

A major portion of the recurring expenditure is borne by the Steel Company, the Government grant being small. The total capital cost that the Steel Company has incurred so far is Rs. 5,15,842, the Government contributing a sum of Rs. 1,08,585 in addition.

In order to meet the growing demand for educational facilities in Jamshedpur, the Steel Company proposes to construct a new High School, 115 Primary Class rooms and 33 Middle Class rooms, during the next three or four years. This programme will entail a total capital expenditure of nearly Rs. 5 lacs and raise the actual annual deficit borne by the Company from Rs. 1,24,500 in 1937-38 to over Rs. 3 lacs in 1941-42.

Dairy Farm :

The Company also maintains an experimental Dairy Farm with nearly 400 cattle. This Farm not only supplies milk, butter, cream and ghee for the patients in the Company's hospital and for sale in the market, but also has an extensive acreage of land under cultivation, producing a rich variety of crops.

APPENDIX B

Welfare Activities of the Steel Company

(*a*) *Safety First* :

A General Safety Committee, affiliated to the National Safety First Association, supervises the operation of the Safety Department.

In 1921, Departmental Safety Committees were formed, which discuss questions relating to Safety, submitting their recommendations before the General Safety Committee for necessary action.

In order to make the workmen safety-minded, Safety posters and literature of the National Safety First Association of London are distributed amongst the employees, lectures arranged and slides exhibited.

Welfare work in the Works :

The Company has a plant of its own for the making of ice and soda, which is provided free to all its employees. Those on " hot jobs " are supplied by the Company with free boots, hand leathers, aprons, gloves and eye-goggles wherever necessary.

Eight hotels are maintained inside the works to provide the workmen with refreshments at cost price, also four stalls for grams, peas, etc., to meet the needs of the lower-paid workmen.

A women's rest-house is also provided, where female employees can wash and change and leave

their babies to be looked after whilst on duty, the latter being served with milk and biscuits free of charge.

Free cinemas, started in 1929, provide entertainment in the outlying *bustees*, and are reminiscent of ancient Athens, where normally no charge was made for seats in the theatre, the two obols that had to be paid occasionally, being refundable under a measure passed by Pericles.

For children there are playgrounds, equipped with see-saws, swings and chutes, run by the Welfare Department of the Steel Company; and for grown-ups, games and sports are organised by the Jamshedpur Sporting Association, of which the governing body is appointed by the Steel Company.

The Co-operative Movement :

In order to save the workmen from falling into the clutches of professional money-lenders, the Company has fostered the growth of the Co-operative Credit system, the number of credit societies in existence towards the end of March, 1938, being 26, with a total membership of 11,582 and a total paid-up share capital of Rs. 10,29,876.

New Profit-Sharing Scheme :

The New Profit-Sharing Scheme, the first of its kind in India, has been introduced recently by the Steel Company. It provides that when dividends payable to Shareholders exceed Rs. 100 lacs, the Company's employees who have been in its service for a year or over will receive a certain proportion as profit-sharing bonus, the amount of which will vary with the figure available for distribution as dividend, this bonus being paid in cash in

the case of employees drawing a salary of less than Rs. 500 a month, and invested in shares of the Steel Company by Trustees acting on behalf of the employees in the case of those drawing Rs. 500 a month or more.

New Gratuity Scheme :

In order to help its employees at the time of their retirement, the Company has also instituted a gratuity scheme under which every permanent non-covenanted employee of the Company, who has been in service for a certain number of years, is eligible for a retiring gratuity equal to half a month's salary or wages for every completed year of unbroken service, subject to a maximum of one year's salary or wages, provided the employee does not draw a salary of more than Rs. 500 per mensem on the date of his retirement.

Provident Fund :

The Tata Company has also a very liberal Provident Fund, all permanent non-covenanted employees drawing Rs. 15 a month or over contributing 1/12th of their salary or wages every month to this fund and the Company adding every year the equivalent of the aggregate contributions made by the employees over the year. Both these contributions are credited to the employees' accounts and invested by the Trustees of the fund as they consider fit, and of the interest earned on these investments after deducting the expenses of the management of the fund, an amount proportionate to each member's individual share in the fund is credited to his account each year.